

CURRICULUM VITAE (September 2024)

I. Dr. MING-HSIANG TSOU

Professor, Department of Geography, San Diego State University.

Founding Director, the Center for Human Dynamics in the Mobile Age (HDMA).

Founding Program Director, Big Data Analytics Program, San Diego State University.

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Ming-Hsiang (Ming) Tsou is a Professor in the Department of Geography, San Diego State University (SDSU) and the Founding Director of the Center for Human Dynamics in the Mobile Age (HDMA) (<http://humandynamics.sdsu.edu/>). He received a B.S. (1991) from National Taiwan University, an M.A. (1996) from the State University of New York at Buffalo, and a Ph.D. (2001) from the University of Colorado at Boulder, all in Geography. His research interests are in **Human Dynamics, Social Media, Big Data, Visualization, Cartography, Web GIS, High Performance Computing (HPC), Mobile GIS, and K-12 GIS education**. He is co-author of *Internet GIS*, a scholarly book published in 2003 by Wiley and served on the editorial boards of *the Annals of GIS* (2008-), *Cartography and GIScience* (2013-) *the Professional Geographers* (2011-2019), *International Journal of Digital Earth* (2022 -) and *International Journal of Geographic Information Science* (2019-). Tsou was the Chair of the Cartographic Specialty Group (2007-2008), the Chair of Cyberinfrastructure Specialty Group (2012-2013) in the Association of American Geographers (AAG), and the co-chair of the NASA Earth Science Enterprise Data System Working Group: Standard Process Group (SPG) from 2004 to 2007. He has been served on two U.S. National Academy of Science Committees: “*Research Priorities for the USGS Center of Excellence for Geospatial Information Science*” (2006-2007) and “*Geotargeted Alerts and Warnings: A Workshop on Current Knowledge and Research Gaps*” (2012- 2013). Dr. Tsou has received over **\$5.27 million extramural funding, as PI or Co-PI**, and **\$28.77 million** funding as Co-Investigators, from **NASA, NSF, NIH, USFS**, and several state and local government agencies. In 2010, Tsou was awarded to a \$1.3 million research grant funded by National Science Foundation and served as the Principal Investigator (PI) of, “**Mapping ideas from Cyberspace to Realspace**” research project (2010-2014). This NSF-CDI project integrates GIS, computational linguistics, web search engines, and social media APIs to track and analyze public-accessible websites and social media (Twitter) for visualizing and analyzing the diffusion of information and ideas in cyberspace. In Spring 2014, Tsou established a new research center, **Human Dynamics in the Mobile Age (HDMA)**, a transdisciplinary research area of excellence at San Diego State University to integrate research works from GIScience, Public Health, Social Science, Sociology, and Communication. Tsou is the founding director of the HDMA Center. In Fall 2014, Tsou received a NSF Interdisciplinary Behavioral and Social Science Research (IBSS) award (PI) for “**Spatiotemporal Modeling of Human Dynamics Across Social Media and Social Networks**” (Award#1416509, \$999,887, 2014-2018, <https://socialmedia.sdsu.edu/>). This large interdisciplinary research project studies human dynamics across social media and social networks, focusing on information diffusion modeling over time and space, and the connection between online activities and real-world human behaviors (including disaster evacuation,

vaccine exemption). Tsou is also involved with several GIS education projects for K-12 and higher education. He has served on the AP GIS&T course advisory board at AAG and a senior researcher in the *National GeoTech Center*, and the Geospatial Technology Coordinator in *California Geographic Alliance* to promote GIS education in universities, community colleges and high schools. Tsou conducted professional GIS training workshops for high school teachers from various disciplines annually at San Diego State University over ten years (2009 - 2018) (<http://geoinfo.sdsu.edu/hightech/>).

In 2019, Dr. Tsou established a new **Big Data Analytics Program (Master of Science)** at San Diego State University and served as the founding program director of the Big Data Analytics Program starting in Fall 2019 semester. The SDSU Big Data Analytics (BDA) Program is a transdisciplinary program across technology, business, engineering, science, and social science domains leading to a Master of Science Degree in Big Data Analytics. The two-year program operates in a collaborative and active transdisciplinary educational environment for students and professionals who wish to advance their knowledge and skills in the fast-growing fields of data science and data analytics. In 2020, Tsou created a research web hub for COVID-19 outbreaks and the mapping services of medical vulnerable population in San Diego (<https://hdma-sdsu.github.io/>). He is collaborating with several SDSU faculty from Public Health, Linguistics, Mathematics and Statistics, and Communication to develop a predictive model for COVID-19 spread patterns and to examine the geographic variations in social contexts, social determinants of health (SDOH), and their influence on minority population and health disparities in relation to the COVID-19 outbreak.

Tsou has published **118 refereed articles, two books, and one National Research Council Report**. In 2023, Tsou is included in the **World's Top 2% of Scientists List** based on his publication records published by Stanford University.

II. EDUCATION

<u>Institution</u>	<u>Years Attended</u>	<u>Degree</u>	<u>Major Field</u>
University of Colorado at Boulder	1996-2001	Ph.D.	Geography
State University of New York at Buffalo	1994-1996	M.A.	Geography
National Taiwan University	1987-1991	B.S.	Geography

*(Ph.D. Dissertation: **A Dynamic Architecture for Distributing Geographic Information Services on the Internet.** Ph.D. Advisor: Dr. Barbara Buttenfield)*

Research Interests

- Big data analytics for human dynamics (communications, movements, activities, spatial diffusion, behaviors).
- Analyzing and visualizing COVID-19 outbreaks at the neighborhood level and analyze Health Disparity related to social and economic factors (social determinants of health).
- Analyzing cancer disparities from a spatiotemporal perspective and developing

visual analytic tools for cancer control and population science.

- Promoting the United Nations Sustainable Development Goals (SDG) and strengthening diversity and deliberation in climate adaptation planning.
- Data visualization and knowledge discovery in social media and social web.
- Surveillance of disease outbreaks and natural disasters (wildfires, flooding, earthquakes, etc.) using social media, crowdsourcing, and GIS methods.
- Web-based spatial decision support tools for disaster response and evacuation.
- Web Geographic Information Services (Web GIS), Mobile GIS, and Location-based Services (LBS).
- Geospatial Data Science education among K-12 schools, community colleges, and universities.

III. TEACHING AND ACADEMIC POSITIONS AND RANKS HELD

<u>Institution</u>	<u>Rank</u>	<u>Dates</u>	<u>Major Subject</u>
San Diego State University	Professor	2011 to present	Geography
San Diego State University	Associate Professor	2005 to 2011	Geography
San Diego State University	Assistant Professor	2000 to 2005	Geography
University of Colorado	Teaching Assistant	1998 to 1999	Geography

<u>Institution</u>	<u>Position</u>	<u>Dates</u>
San Diego State University	Director, Big Data Analytics Program (MS)	2019 -
San Diego State University	Director, the Center for Human Dynamics in the Mobile Age (HDMA).	2014 -

IV. AWARDS AND HONORS

Education/Teaching Awards

- 2018 CPGIS **Education Excellent Award** (The International Association of Chinese Professionals in Geographic Information Science).
- 2016: Excellence in Education Award, California Geographic Information Association (CGIA).
- 2011: San Diego State University Senate **Excellence in Teaching Award** for 2010-2011 (the College Awardee).
- 2010 and 2004: **Outstanding Faculty Award**, San Diego State University. (The Outstanding Faculty Award is in recognition as the most influential university professor in the academic career of the Outstanding Graduating Senior, one award per year in each department).

Professional and Research Awards:

- 2019-2020: **The Excellence in Research Award** (for tenured faculty) at the College of Arts and Letters, San Diego State University (\$1500).
- 2015: **The Best Methods Paper Award** at the 2015 International Conference of Social Media and Society (July 27 – 29, 2015, Toronto, Canada).
- 2012: **The President's Leadership Fund (PLF) Faculty and Staff Awards for Excellence**, San

Diego State University (Award funding: \$5,000).

- 2009: **HI-TEC (education) Innovative Program award** at the 2009 HI-TEC conference (National Science Foundation: High Impact Technology Exchange Conference) with Professor Kenneth Yanow at Southwestern College.

V. PROFESSIONAL GROWTH

Google Scholar: <https://scholar.google.com/citations?user=3eatNZEAAAAJ&hl=en>
(Total: 5102 citations on 9/15/2024).

ORCID ID: <http://orcid.org/0000-0003-3421-486X>

Serving on two U.S. National Academy of Science Committees:

- 2012- 2013: National Research Council of the National Academy of Science (NAS), Committee on ***Geotargeted Alerts and Warnings: A Workshop on Current Knowledge and Research Gaps***. Committee member, 2012- 2013. (Research gap analysis for Department of Homeland Security and FEMA).
http://www.nap.edu/catalog.php?record_id=18414
- 2006-2007: National Research Council of the National Academy of Science, Committee on ***Research Priorities for the USGS Center of Excellence for Geospatial Information Science***, Committee member. 2006-2007.
http://www.nap.edu/openbook.php?record_id=12004

Serving on the editorial boards of referred journals:

- **Annals of GIS** (2008- present)
- **Professional Geographers** (2011- 2019).
- **Cartography and Geographic Information Science** (2013- present).
- **International Journal of Geographic Information Science** (2019- present)
- **International Journal of Digital Earth** (2022 – present)

Serving on the **Board of Directors, San Diego State University Research Foundation**. (2014 – present).

Extramural Support Total: \$33.19 million (accumulative funding amounts as PI or CO-PI: \$5,272,347. and as Co-Investigator: \$28,777,105.)

2024-2027 **PI (Tsou). National Science Foundation: Build and Broaden (B2) Award** for “*Spatiotemporal Changes, Socio-Environmental Impacts, and the Homeless Population*” (Award#: 2417568, Funding Amount: **\$450,000**, 2024-2027, three years). Co-PIs: Dr. Atsushi Nara (Geography and GIS), Dr. Xiaobai Liu (Computer Science), Dr. Audrey Beck (Sociology), and Dr. Gabriela Fernandez (Geography and HDMA Center). This project addresses the issue of homelessness in a border region by developing advanced artificial intelligence (AI) and geospatial techniques to map and analyze the encampments of homeless population. By integrating data from street view images,

remote sensing imagery, and geographic information systems, the research identifies patterns of migration by unhoused populations in San Diego.

- 2024-2025 Co-PI (Tsou). **Merck** Investigator Studies Program (MISP). PI: Dr. Lourdes S. Martinez (School of Communication): *“Examining Patterns of Vaccine Acceptance and Uptake in U.S.-Mexico Border Region”* (Award#: 1634641, Funding Amount: **\$126,547.20**, One year). The overall objective of the proposed research is to identify (and uncover geographical patterns of) 1) underlying psychosocial beliefs determining vaccine uptake, 2) intention-behavior gaps for vaccination, and 3) the role of information engagement in shaping vaccination uptake for 3 vaccines (seasonal flu, dengue, and Hepatitis A) in the U.S.-Mexico border region.
- 2024-2025 Co-PI (Tsou). **National Science Foundation: EAGER Award**. *“Innovation in Society Study Group”* (Award#: 2348836, Funding Amount: **\$297,300**, 2024-2025, one year). PI: Dr. Arthur A Daemmrich (Arizona State University). Co-PI: Dr. Kimber Mckay (University of Montana). This project is to organize a diverse group of leading social and behavioral science scholars to make recommendations to the NSF and to scientific and engineering fields regarding best practices for use-based and translational technology development.
- 2022 Co-Investigator and GIS / Big Data Analytics leader (Tsou). *Community Partnership for Telehealth Solutions to Counter Misinformation and Achieve Equity (PRIME)*, NIH R01MD018253, Five Years (September 2022 – April 2027, **\$2,655,420**). (PI: Gloria Coronado, Kaiser Permanente Center for Health Research) (SDSU PI: Elva Arredondo). PRIME will assess neighborhood-level social determinants of health and adapt and optimize a telehealth-solution to improve the quality, reach, and effectiveness of colorectal cancer screening in predominantly Latinx clinic populations aged 45-54.
- 2020 Co-Investigator and GIS/mapping leader (Tsou). San Diego State University: *Communities Fighting COVID! (NIH RADx-Up: 3U54CA132384-10S1)*, (MPIs: Hala Madanat, Susan Kiene, Eyal Oren). (September 2020 – August 2021), **\$3,876,170**. This study will use community health workers for outreach to underserved populations (Latino/Latina, African American, Filipino, and immigrant communities) in the San Diego area to facilitate COVID-19 testing. Tsou will use GIS/Mapping tools to identify possible locations and Zip Code areas for mobile testing sites and home visits of COVID-19 testing.
- 2020 PI (Tsou). University of California at San Diego, Moores Cancer Center. *“YEAR2: GIS and Data Visualization Enhancement with the Data Mart Infrastructure in the California Teachers Study (CTS)”*, **\$49,442**. (one year, 2020). CTS PIs: Dr. Elena Martinez at UCSD and Dr. James Lacey at City of Hope.
- 2019 PI (Tsou). University of California at San Diego, Moores Cancer Center. *“GIS and Data Visualization Enhancement with the Data Mart Infrastructure in the California Teachers Study (CTS)”*, **\$78,951**. (one year, 2019). CTS PIs: Dr. Elena Martinez at UCSD

and Dr. James Lacey at City of Hope.

- 2018 - 2023 Co-I and Co-Lead of Research Infrastructure Core (Tsou). **U54 MD012397-01A1 NIH/NIMHD**, “*SDSU HealthLINK Center for Transdisciplinary Health Disparities Research*”, (\$**19,884,795**, five years). MPI: Ayala (Public Health) and Wells (Psychology). The goal of the SDSU HealthLINK Center for Transdisciplinary Health Disparities Research is to enhance capacity and improve infrastructure at SDSU and its partner organizations to advance minority health and health disparities research among racially/ethnically diverse, sexual and gender minority, and lower-income populations using a community-engaged transdisciplinary research approach. Tsou will lead the development of the **HealthLINK data analytics portal** and **open data center** for health disparity research.
- 2018 Co-PI (Tsou), PI: Arash Jahangiri, Big Data Visualization and Spatiotemporal Modeling of Aggressive Driving. (Feb 2018 – May 2019), **\$280,670**. Funding Agency: Saft-D National UTC. (<https://www.vtti.vt.edu/utc/safe-d/index.php/projects/big-data-visualization-and-spatiotemporal-modeling-of-aggressive-driving/>). Completed.
- 2017 Co-I (Tsou). NIH U54 SDSU/UCSD **Cancer Center Comprehensive Partnership Pilot Fund** “*Is it race, or place? Disentangling racial, socioeconomic and geographic disparities in the cancer burden of San Diego and Imperial counties*”, **\$49,569**. (2017). PI: Caroline A. Thompson, PhD, MPH. Completed.
- 2016-2020 PI (Tsou). **National Science Foundation: Infrastructure Management and Extreme Events (IMEE) Award** for “*Integrated Stage-based Evacuation with Social Perception Analysis and Dynamic Population Estimation*” (Award#: 1634641, Funding Amount: **\$465,189**, 2016-2020, three years with one year no-cost extension). Co-PIs: Dr. Atsushi Nara (Geography and GIS), Dr. Xianfeng Yang (Civil Engineering), and Dr. Sahar Ghanipoor Machiani. Using Big Data-driven techniques, this project will integrate multiple data sources including social media, census survey, geographic information systems (GIS) data layers, volunteer suggestions, and remote sensing data to develop an integrated wildfire evacuation decision support system (IWEDSS). <http://decisionsupport.sdsu.edu>
- 2014-2019 PI (Tsou). **National Science Foundation Interdisciplinary Behavioral and Social Science Research (IBSS) Award** for “*Spatiotemporal Modeling of Human Dynamics Across Social Media and Social Networks*” (Award#:1416509, Funding Amount: **\$999,887**, 2014-2019). (<http://socialmedia.sdsu.edu/>). Collaborate with Drs. Jay Lee (Co-PI, Kent State), Ruoming Jin (Co-PI, Kent State), Xinyue Ye (Kent State), Brian Spitzberg (Co-PI, SDSU), Jean Marc Gawron (Co-PI, SDSU), Heather Corliss (SDSU), and Xuan Shi (U of Arkansas). This large interdisciplinary research project studies human dynamics across social media and social networks, focusing on information diffusion modeling over time and space, and the connection between online activities and real world human behaviors.

- 2017-2022 Senior Personnel (Tsou). GeoTech Center 3.0. National Science Foundation (NSF) Advanced Technology Education (ATE) program. PI: Vincent A. DiNoto, Jr., Director of GeoTech Center, Jefferson Community and Technical College. SDSU Sub-award: **\$24,805**. (2017-2022). (<http://www.geotechcenter.org/>). GeoTech Center has served as the national, unifying voice for two-year college GST programs. The center coordinates collaborations between colleges, universities, and industry to expand the GST workforce by providing professional development opportunities, teaching and curriculum resources, career pathways, and model core competencies for GST technicians and technologists.
- 2015 PI (Tsou): GeoQuest Jumpstart: Professional Training Workshop for GIS teachers in High Schools. Funded by ESRI ConnectED program. **\$5000**. Completed.
- 2013-2015 Senior Personnel (Tsou). GeoTech Center 2.0. National Science Foundation (NSF) Advanced Technology Education (ATE) program. PI: Vincent A. DiNoto, Jr., Director of GeoTech Center, Jefferson Community and Technical College. SDSU Sub-award: **\$54,895**. (2013-2015). (<http://www.geotechcenter.org/>), Completed.
- 2010-2014 PI (Tsou). National Science Foundation (NSF) Award: “CDI-Type II: Mapping Cyberspace to Realspace: Visualizing and Understanding the Spatiotemporal Dynamics of Global Diffusion of Ideas and the Semantic Web.”** 09/01/2010- 08/31/2014. (48 months). Award # 1028177. (Co-PIs: Dipak K Gupta, Political Science, SDSU; Jean Marc Gawron, Linguistics, SDSU; Brian Spitzberg, Communication, SDSU, Senior Personnel: An Li, Geography). Funding Amount: **\$1,388,338**. Completed.
- 2012 PI (Tsou). Web GIS Mapping for Older Adult Services in San Diego. San Diego Foundation. **\$33,448**. (Jan 2012 – Dec 2012). (Co-PI: Dr. Yawen Li, School of Social Work) Completed.
- 2011 Co-PI (Tsou). Web GIS Mapping for Older Adult Services in San Diego. San Diego Foundation. **\$28,000**. (Jan 2011 – Sep 2011). Completed.
- 2011 PI (Tsou). Connectory GIS Improvement Project. San Diego East County Economic Development Council, **\$15,000**. (Jan 2011 - August 2011). (<http://geoinfo.sdsu.edu/connectory/index.html>) Completed.
- 2010 Co-Investigator (Tsou). US Forest Services (USFS). FS Recovery Act Agreement No. 10-JV-11279701-10. (PIs: Dr. Douglas A. Stow and Dr. Philip J. Riggan). *“Airborne remote sensing to enable hazardous fuels reduction, forest health protection, rehabilitation and hazard mitigation activities on Federal lands.”* Time period: March 1st, 2010 through December 31, 2014. Founding Amount: **\$459,380**. Completed.
- 2009 Co-Investigator (Technology developer). Founding Agency: the San Diego Foundation. *MAPS (Metropolitan Area Pluralism Study)*. PI: Dr. Rebecca Moore, Department of

- Religious Studies, SDSU. **\$ 23,000** (2009 – 2010). Completed.
(<http://geoinfo.sdsu.edu/maps/>)
- 2009 PI (Tsou). *Bizarre Map Challenge (BMC): A Nationwide Map Design Competition*, funded by the National GeoTech Center (NSF-supported). (Nine months, Dec 1, 2009 – August 31, 2010). **\$31,000**. Completed.
- 2009 PI (Tsou). International Community Foundation. *“Baja-Eco-Info Mapping Tool: Mapping Conservation and Threats for the Gulf of California”*, (nine months, Jan 1, 2009 – August 31, 2009). **\$11,500**. Completed. (<http://geoinfo.sdsu.edu/baja/>)
- 2008 PI (Tsou). San Diego County, Office of Education. *“Geographic Information System for the Splash Station”*, (1.5 months, July 15, 2008 – August 31, 2008). **\$3,784**. Completed.
- 2008** Senior Personnel (Tsou), National Science Foundation (NSF) Advanced Technology Education (ATE) program: *National Geospatial Technology Center (GeoTech Center)* Project Period: 09/1/08-2008/30/2012. Total Funding Amount: \$4,999,997. PI: Dr. Philip Davis (Del Mar College, Texas). Tsou is the project manager for the SDSU Sub-award. **SDSU Sub-award: \$180,000** (four years, 2008-2012). Completed.
(<http://www.geotechcenter.org/>)
- 2006 PI (Tsou). San Diego Coast Keeper. *“Multimedia GIS Research Project”*. (seven months – Jan 10, 2006 – August 31, 2006). **\$9,125**. Completed.
(<http://geoinfo.sdsu.edu/mediaGIS/>).
- 2004** CO-PI (Tsou): **National Science Foundation, Advanced Technology Education Program (NSF-ATE) Award: “A Scalable Skills Certification Program in Geographic Information Systems (GIS)”** PI: Dr. Kendra Jeffcoat at San Diego Mesa College. Total Funding Amount: \$749,847. (Tsou is the project director for the SDSU sub-award) (four years, 2004-2008, started from October 1, 2004). **SDSU sub-award: \$222,060** Completed. (<http://geoinfo.sdsu.edu/hightech/>).
- 2004** CO-PI (Tsou): City of San Diego. *“The San Diego Watershed Common Grounds Project”*. PI: Karen Henry at City of San Diego, Storm Water Pollution Prevention Program. Total funding amount: \$1 million. (30 months, started from July 1, 2004 to 2006). SDSU Funding Amount: **\$ 333,564**. Completed. (<http://www.sdbay.sdsu.edu/>).
- 2004 CO-PI (Tsou): South Coast Resource Conservation Development Council (State funding). *“Development of a Web-based Tool for Non-Point Source Pollution in the Newport Bay and Tijuana River Watersheds”*/ PI: Dr. Richard Wright. (20 months, started from November, 2004). Total funding amount: **\$123,589**. Completed.
- 2003 CO-Investigator (Tsou): NASA Research, Education and Applications Solution Network (REASoN) Project: *“A Border Security Decision Support System Driven by Remotely Sensed Data Inputs”*. PI: Dr. Douglas Stow. Funding Agency: National Aeronautics and

Space Administration (NASA). (Five years, 2003-2008). **\$1,837,771**. Completed. (<http://geoinfo.sdsu.edu/reason/>).

2002 PI (Tsou): NASA ARC Project: “*Integrated Mobile GIS and Wireless Internet Image Servers for Environmental Monitoring and Management*”. Funding Agency: National Aeronautics and Space Administration (NASA). **\$70,500** (12 months, completed). (<http://map.sdsu.edu/mobilegis/>).

2001 PI (Tsou): NASA ARC Project: “*Web-based Geospatial Information Services For Natural Habitat Conservation and Management*”. **\$41,000** (12 months, completed). (<http://map.sdsu.edu/arc/>).

Intramural Support (San Diego State University)

2021 PI: SDSU Center and Institute Funding: *The Center for Human Dynamics in the Mobile Age (Three Pilot Projects)*, Two Years (September 2021 – August 2022). \$40,000. (completed).

2000 PI: Grant-In-Aid Award: “*Software Agent Communication Mechanism for Distributing GIServices on the Internet*”. Funding Agency: San Diego State University Foundation. Funding Amount: \$8,000 (completed).

2000 PI: Faculty Development Program Award. “*Developing a Dynamic Architecture for Internet Mapping and Distributed GIServices*”, Funding Agency: San Diego State University. Funding Amount: \$5,000 (completed).

PUBLICATIONS (one co-authored book, two co-edited book, two journal special issues, one co-authored NRC report, and **118 refereed articles**, including **64 journal papers**, **25 refereed book chapters**, **9 encyclopedia entries**, and **20 refereed conference proceedings**).

Google Scholar Link: <https://scholar.google.com/citations?user=3eatNZEAAA&hl>

Scholarly Books

- Peng, Zhong-Ren and Tsou, Ming-Hsiang (2003). ***Internet GIS: distributed geographic information services for the Internet and wireless networks***. (720 pages, publisher: John Wiley & Sons, Inc.). This is a co-authored book. My contribution is 50% (360 pages). This scholarly book has been widely cited by many researchers and become a major literature in the field of Internet/Web GIS. The Google Scholar index: **907** citations).

Edited Books:

- Atsushi Nara and Ming-Hsiang Tsou (**Co-Editors**): (2021). Empowering Human Dynamics Research with Social Media and Geospatial Data Analytics. Springer. (Total: 15 chapters). <https://link.springer.com/book/10.1007/978-3-030-83010-6>
- Tom Cova and Ming-Hsiang Tsou (**Co-Editors**): (2018). *Comprehensive Geographic Information Systems: Volume 1: GIS Methods and Techniques, Reference Module in Earth Systems and Environmental Sciences*. Elsevier (Total: 35 chapters).

Encyclopedia Editors:

- Ming-Hsiang Tsou: **Section Editor** in GIScience for *the International Encyclopedia of Geography*. (2016 – 2019). Edited by Douglas Richardson, Noel Castree, Michael F. Goodchild, Audrey Kobayashi, Weidong Liu, and Richard A. Marston. DOI: 10.1002/9781118786352.wbieg0904., The American Association of Geographers.

Edited Special Issue in Refereed Journals

- Tsou, Ming-Hsiang and Michael Leitner (guest editors) (March 2013 issue). Special Content Issue: “**Mapping Cyberspace and Social Media**”. *Cartography and Geographic Information Science*. 2013.
- Shih-Lung Shaw, Ming-Hsiang Tsou, Xinyue Ye (guest editors) (2015-2016). Special Issue on “**Human Dynamics in the Mobile and Big Data Era**”, *International Journal of Geographical Information Science (IJGIS)*, 2016.

National Research Council Report (2007): A Research Agenda for Geographic Information Science at the United States Geological Survey, The National Academies Press, Washington DC. Report by Committee on Research Priorities for the USGS Center of Excellence for Geospatial Information Science. Co-authors (committee members): R. Denaro, K. Beard-Tisdale, C. Brewer, M. Domaratz, P. Gong, R. McMaster, M. Tsou, and J. Wilson. http://www.nap.edu/catalog.php?record_id=12004

Articles in Refereed Journals (*: Served as Corresponding Author, †: Tsou’s students).

1. Park, J, Tsou, M. H., Nara, A., Dodge, S., & Cassels, S. (2024). Examining human mobility changes during COVID-19 across socioeconomic groups: a comparative analysis of San Diego County and New York City. *Computational Urban Science*, 4(1), 21. <https://link.springer.com/article/10.1007/s43762-024-00133-1>
2. Embury, J., Nara, A., Rey, S., Tsou, M. H., & Ghanipoor Machiani, S. (2024). Detecting synthetic population bias using a spatially-oriented framework and independent validation data. *International Journal of Geographical Information Science*, 1–27. <https://doi.org/10.1080/13658816.2024.2358399>

3. Park, J, Tsou, M. H., Nara, A., Cassels, S., Dodge, S. (2024). Developing a social sensing index for monitoring place-oriented mental health issues using social media (twitter) data. *Urban Informatics*, 3(1). <https://doi.org/10.1007/s44212-023-00033-5>
4. Tsou, Ming-Hsiang & Christian Mejia (17 Oct 2023): Beyond mapping: extend the role of cartographers to user interface designers in the Metaverse using virtual reality, augmented reality, and mixed reality, *Cartography and Geographic Information Science*, DOI: 10.1080/15230406.2023.2264748.
5. Dang, L., Wang, C., Tsou, M. H., Hou, Y. E., & Han, H. (2023). Sentiment analysis of COVID-19 related social distancing using twitter data based on deep learning. *Multimedia Tools and Applications*, 1-26. <https://doi.org/10.1007/s11042-023-17011-3>
6. Chin, W. C. B., Feng, C. C., Leong, C. H., Pang, J., Clapham, H. E., Nara, A., ... & Wang, Y. C. (2023). Integrating local and neighboring area influences into vulnerability modeling of infectious diseases in Singapore. *International Journal of Applied Earth Observation and Geoinformation*, 121, 103376. <https://doi.org/10.1016/j.iag.2023.103376>
7. Fernandez, G., Maione, C., Yang, H., Zaballa, K., Bonnici, N., Carter, J., ... & Tsou, M. H. (2023). COVID-19 Societal Effects and Perceptions: A Case Study of Italy" *Medical Sciences Forum* 19, no. 1: 10. <https://doi.org/10.3390/msf2023019010>
8. Tsou, M. H., Xu, J., Lin, C. D., Daniels, M., Embury, J., Park, J., ... & Gibbons, J. (2023). Analyzing Spatial-Temporal Impacts of Neighborhood Socioeconomic Status Variables on COVID-19 Outbreaks as Potential Social Determinants of Health. *Annals of the American Association of Geographers*, 1-22. <https://doi.org/10.1080/24694452.2022.2149460>
9. Fernandez, G., Maione, C., Yang, H., Zaballa, K., Bonnici, N., Carter, J., ... & Tsou, M. H. (2022). Social Network Analysis of COVID-19 Sentiments: 10 Metropolitan Cities in Italy. *International Journal of Environmental Research and Public Health*, 19(13), 7720. <https://www.mdpi.com/1660-4601/19/13/7720>
10. Embury J., Tsou MH, Nara A, Oren E. (2022). A Spatio-Demographic Perspective on the Role of Social Determinants of Health and Chronic Disease in Determining a Population's Vulnerability to COVID-19. *Preventing Chronic Disease* 2022; 19:210414. <http://dx.doi.org/10.5888/pcd19.210414>
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101. Park, Jaehee†, Hao Zhang, Su Yeon Han, Atsushi Nara, and Ming-Hsiang Tsou. (2020) "Estimating Hourly Population Distribution Patterns at High Spatiotemporal Resolution in Urban Areas Using Geo-Tagged Tweets and Dasymetric Mapping." In *11th International Conference on Geographic Information Science (GIScience 2021)*-Part I. Schloss Dagstuhl-Leibniz-Zentrum für Informatik, <https://drops.dagstuhl.de/opus/volltexte/2020/13045/pdf/LIPIcs-GIScience-2021-I-10.pdf>

102. Park, Jaehee[†], and Ming-Hsiang Tsou. (2020). "Analyzing Public Discourse on Social Media With A Geographical Context: A Case Study of 2017 Tax Bill." In *International Conference on Social Media and Society*, pp. 14-20. 2020.
<https://doi.org/10.1145/3400806.3400809>
103. Martinez, Lourdes. S., Ming-Hsiang Tsou, & Brian H. Spitzberg (2019) A case study in belief surveillance, sentiment analysis, and identification of informational targets for e-cigarettes interventions. *Proceedings of the 10th International Conference on Social Media and Society*. July 19-21, 2019. Toronto, Canada. Association for Computing Machinery. <https://dl.acm.org/citation.cfm?id=3328540>
104. Dozier, Jessica [†], Kimberly McFarland, Sahar Ghanipoor Machiani, Atsushi Nara, Xianfeng Yang, Ming-Hsiang Tsou (2019) Improve disaster communication in hyperlocal online and offline communities using social media data: A case study of the 2015 Nepal earthquake. *Proceedings in 2019 Annual Meeting of Transportation Research Board (TRB)*, January 13–17, Washington D.C.
105. Yen, Chi-Feng[†], Ming-Hsiang Tsou*, Chris Allen (2018), Assessing Neighborhood Conditions using Geographic Object-Based Image Analysis and Spatial Analysis (Short Paper). *GIScience 2018: 70:1-70:7*. <http://drops.dagstuhl.de/opus/volltexte/2018/9398/>
106. Jiang, Wei, Yandong Wang, Ming-Hsiang Tsou, Xia Fu (2016) Using geo-targeted social media data to detect outdoor air pollution. Extended Abstract in *the Proceeding of the XXIII ISPRS Congress*, Prague, Czech Republic, July 12th – 19, 2016. *The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, 41, p.553.
107. Tsou, Ming-Hsiang, Chin-Te Jung, Chris Allen, Jiue-An Yang, Jean-Mark Gawron, Brian H. Spitzberg, and Su Han (2015, July). Social media analytics and research test-bed (SMART dashboard). In *Proceedings of the 2015 International Conference on Social Media & Society* (Article No. 2). ACM. URL: <http://dl.acm.org/citation.cfm?id=2789196>
(Receiving the Best Method Paper Award).
108. Tsou, Ming-Hsiang, & Daniel Lusher (2015) Mapping Web Pages by Internet Protocol (IP) addresses: Analyzing Spatial and Temporal Characteristics of Web Search Engine Results. *Proceedings of the International Symposium on Cartography in Internet and Ubiquitous Environments 2015*, 17th - 19th March, Tokyo.
109. Jung, Chin-Te, Ming-Hsiang Tsou, and Elias Issa (2015) Developing a real-time situation awareness viewer for monitoring disaster impacts using location-based social media messages in Twitter. *International Conference on Location-Based Social Media Data*, Athens, GA, U.S.A. March 12-14, 2015.
110. Tsou, Ming-Hsiang, Susan I. Woodruff, Brian Spitzberg, Mark Reed, Jean Mark Gawron, Chris Allen, Jiue-An Yang (2014) Using GIS and Geo-targeted Social Media (Twitter) to Track Illicit Drug Use Trends in Space and Over Time. *GIScience 2014 Conference*, Vienna, September 23-26. Extended Refereed Abstract.
111. Tsou, Ming-Hsiang, Brian H. Spitzberg, Chris Allen, Anoshé Aslam, and Anna Nagel, Geo-Targeted Social Media Analytics for Tracking Disease Outbreaks and Public Opinion at the Municipal Scale. *2014 National Conference on Health Communication, Marketing,*

and Media, Atlanta, Georgia. August 19-21, 2014.

<https://nphic.confex.com/cdc/nphic14/webprogram/Paper35448.html>

112. Tsou, Ming-Hsiang & Jiue-An Yang (2012). Spatial Analysis of Social Media Content (Tweets) during the 2012 US Republican Presidential Primaries. GIScience 2012 Conference, Columbus, Ohio, 18-21 September 2012. URL: http://www.giscience.org/past/2012/proceedings/abstracts/giscience2012_paper_77.pdf.
113. Gawron, Jean Mark, Dipak Gupta, Kellen Stephens, Ming-Hsiang Tsou, Brian Spitzberg and Li An. (2012). Using Group Membership Markers for Group Identification, *Proceedings of the Sixth International AAAI Conference on Weblogs and Social Media*, p.467- 470.
114. Tsou, Ming-Hsiang (2011). Mapping Cyberspace: Tracking the Spread of Ideas on the Internet. Refereed Proceedings of the 25th International Cartographic conference, July 3-8, 2011, Paris, France. http://icaci.org/documents/ICC_proceedings/ICC2011/Oral%20Presentations%20PDF/D3-Internet,%20web%20services%20and%20web%20mapping/CO-354.pdf
115. Tsou, Ming-Hsiang, Tong Zhang, and John Kaiser (2007) Internet GIServices for Homeland Security, Geoinformatics 2007 Conference (17–18 May 2007) http://gsa.confex.com/gsa/2007GE/finalprogram/abstract_122039.htm.
116. Tong Zhang†, Ming-Hsiang Tsou, Qinghua Qiao, and Lin Xu (2006). Building an intelligent geospatial cyberinfrastructure: an analytical problem solving approach, Proc. SPIE, Vol. 6420, 64200A (2006); doi:10.1117/12.712656. Conference Title: Geoinformatics 2006: Geospatial Information Science.
117. Tsou, Ming-Hsiang and Barbara P. Buttenfield (1998). Client/Server Components and Metadata Objects for Distributed Geographic Information Services. *Proceedings, GIS/LIS '98*, Fort Worth, TX, November, 1998: 590-599.
118. Tsou, Ming-Hsiang and Barbara P. Buttenfield (1998). An Agent-based, Global User Interface for Distributed Geographic Information Services. *Proceedings of the 8th International Symposium on Spatial Data Handling*, Vancouver, British Columbia, July, 1998: 603-612.

Refereed Poster Presentations or Oral Presentations (Selective)

- 2018, January 29, Ming-Hsiang Tsou, Atsushi Nara, Arash Jahangiri, Sahar Ghanipoor Machiani. Developing Web-based Spatiotemporal Analytics Software Tools for Analyzing Connected Vehicle Data and Aggressive Driving Behaviors. Workshop on Geospatial Software: Connecting Big Data with Geospatial Discovery and Innovation, University of Southern California, Los Angeles, CA, USA. <https://publish.illinois.edu/geospatialsi/workshops/agenda/>
- 2016, September 13, Ming-Hsiang Tsou, Ph.D.; Su Yeon Han, M.S.; Atsushi Nara, Ph.D.; Joseph Gibbons, Ph.D.; Caroline A. Thompson, Ph.D., San Diego State University. "An

Interactive Web Mapping Tool for Visualizing Cancer Disparities with Socioeconomic Variables”, **Conference on Geospatial Approaches to Cancer Control and Population Sciences**, September 12-14, 2016, Natcher Conference Center, NIH Campus, Bethesda MD. URL: <http://epi.grants.cancer.gov/events/geospatial/#>

- 2016, September 14, Sindana Ilango, Katy Torres, Vaishali Doshi, Chelsea Obrochta, Ming-Hsiang Tsou, Atsushi Nara, Joseph Gibbons, Su Han, Scarlett Gomez, Salma Shariff-Marco, Caroline A. Thompson (2016). *A systematic review of research utilizing geospatial analytic approaches to describe and understand the burden of screening-detectable cancers in the United States*. Refereed Poster Session at the Conference on Geospatial Approaches to Cancer Control and Population Sciences, September 12-14, 2016, Natcher Conference Center, NIH Campus, Bethesda MD. URL: <http://epi.grants.cancer.gov/events/geospatial/#>.
- 2016, July 13, Jiang, W., Yang, Y., Tsou, M.H., Fu, X. (2016). Using geo-targeted social media data to detect outdoor air pollution. In the Oral Presentation at the 2016 ISPRS Congress, July 12-19, 2016, Prague, Czech Republic.
- 2016, October. Buhi, E., Peddecord, M., Tsou, M.H., Jung, C. (2016). Syndromic surveillance and disease tracking: An application of the Social Media and the Social Media Analysis & Research Testbed (SMART) dashboard. Oral Presentation at the APHA 2016 Annual Meeting & Expo (Oct. 29 - Nov. 2, 2016) in Denver, Colorado.
- 2016, July. Tsou, M-H., Jung, C-T., Allen, C., Yang, J-A., Han, S., Spitzberg, B. H., & Dozier, J. (2016, July). Geo-targeted Event Observation (GEO) Viewer for situation awareness with advanced mapping and visualization functions. Poster presentation, SMSociety16 Conference, London, England.

White Papers:

- Ming-Hsiang Tsou and Jennifer Smith (2011). **Free and Open Source Software for GIS education**, GeoTech Center. <https://map.sdsu.edu/tsou/papers/2011-tsou-free-GIS-for-educators-whitepaper.pdf>

Book Review

- Tsou, Ming-Hsiang (2019), Cross the line: My response to the trouble of critical GIS. *Transactions in GIS*. doi:10.1111/tgis.12506. <https://onlinelibrary.wiley.com/doi/10.1111/tgis.12506>
- Tsou, Ming-Hsiang (2014). Book Review: Big data: techniques and technologies in geoinformatics. *Annals of GIS*, 20(4), 295-296.
- Tsou, Ming-Hsiang (2008). Book Review: Map-based Mobile Services: Theories, Methods, and Implementations by Liqui Meng, Alexander Zipf, and Tumasch Reichenbacher (Eds.). *Annals of GIS*. 15(1), p. 73. (<http://www.informaworld.com/smpp/content~db=all~content=a916953862~frm=titlelink>)

Invited Articles in Major GIS Professional Magazines and Newsletters

- Chen, Yulu, Tsou, Ming-Hsiang, Nara, Atsushi (2019). Analyzing Transportation Big Data with GIS: Detecting Over-speeding Vehicles from Traffic GPS Data. *CSU Geospatial Review*, Volume 16, 11-12.
- Tsou, Ming-Hsiang, Stow, D., and J. Kaiser. (2006). Spatial Decision Support Services Enhance Homeland Security. *GeosIntelligence*, Mar/Apr 2006. pp. 18-23.
- Tsou, Ming-Hsiang 2005. Recent Development of Internet GIS at GIS@development: http://www.gisdevelopment.net/technology/gis/techgis_002pf.htm
- Tsou, Ming-Hsiang (2004). Present realities and the future of Internet GIS. *GIS@Development Magazine*. July 2004, vol. 8 (7). Pp. 29-32. (URL: <http://www.gisdevelopment.net/magazine/years/2004/july/29.shtml>)
- Tsou, Ming-Hsiang (2004). Tracking the 2003 San Diego Wildfire. *CSU Geospatial Review*. Spring 2004, Vol. 2(1). Pp.1.

SYNERGISTIC ACTIVITIES

- **Founding Program Director** of the Big Data Analytics Program (Master of Science) at San Diego State University starting in Fall 2019 semester. The SDSU Big Data Analytics (BDA) Program is a two-years transdisciplinary program across technology, business, engineering, science, and social science domains leading to a Master of Science Degree in Big Data Analytics.
- **Founding Director** of the Center for Human Dynamics in the Mobile Age at San Diego State University (<http://humandynamics.sdsu.edu/>), a transdisciplinary research center of excellence to facilitate integrated research efforts and projects from GIScience, Public Health, Social Science, Sociology, and Communication.
- The Co-Chair of the NASA Earth Science Data System Working Group (ESDSWG) Standard Process Group (SPG) from 2004 to 2007. Elected by the SPG members during the NASA ESDSWG annual meeting at Orlando, Florida, January 2004. (*Website of SPG: <http://spg.gsfc.nasa.gov/>*)
- The Chair of the **Cartographic Specialty Group (CSG)** (2007 – 2008) in the Association of American Geographers.
- The Chair of the **Cyberinfrastructure Specialty Group** (2012-2013) in the Association of American Geographers.
- Invited to serve on the Scientific Boards for GIS PLANET 2005 (International GIS Conference), GIScience 2008/2010/2012/2014/2016/2018 International Conference, (Reviewing conference paper submissions).
- Invited to serve on the Scientific Committee of WebMGS 2010 and WebMGS2011 (ISPRS: 1st International Workshop on Pervasive Web Mapping, Geoprocessing and Services, the International Society for Photogrammetry and Remote Sensing)
- Invited to serve on the Program Committee of ACM SIGSPATIAL International Workshop on High Performance and Distributed Geographic Information Systems (HPDGIS) 2010 (<http://www.cigi.illinois.edu/hpdgis10/committee.php>)

- Invited to create a Webinar workshop for the American Society for Photogrammetry and Remote Sensing (ASPRS) for the ASPRS certification program, June 10, 2010 and March 15, 2011.
- Invited as an international research proposal reviewer for several scientific research foundations in North America, Europe, and Asia.
- Invited as a research program proposal review panelist for National Science Foundation and as a research proposal external reviewer for National Science Foundation, NASA, and U.S. Civilian Research & Development Foundation (2007, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018).
- External reviewer for tenured faculty promotion and non-tenured faculty promotion.

2000-2001 Faculty Fellowship (1/4 salary), the Education Center on Computational Science and Engineering (ECCSE) at San Diego State University. The ECCSE is part of the Education, Outreach, & Training Thrust of the National Partnership for Advanced Computational Infrastructure (NPACI) and San Diego Supercomputer Center (SDSC) Partnerships.

Manuscript Reviewer for Academic Refereed Journals

- *American Journal of Public Health*
- *Annals of GIS*
- *Annals of the Association of American Geographers.*
- *Applied Geography*
- *Applied Spatial Analysis and Policy*
- *Big Data and Society*
- *Bulletin of Engineering Geology and the Environment*
- *CANCER EPIDEMIOLOGY, BIOMARKERS, & PREVENTION*
- *Cartographica*
- *Cartography and Geographic Information Science (CaGIS)*
- *Computers & Geosciences*
- *Computers, Environment and Urban Systems*
- *Decision Support Systems*
- *Demography*
- *Environmental Earth Sciences*
- *Frontiers of Earth Science*
- *Geographical Analysis*
- *GeoJournal*
- *Geomatica*
- *IEEE Transactions on Computational Social Systems*
- *IEEE Computer Graphics and Applications*
- *IEEE Internet Computing*
- *International Journal of Applied Geospatial Research (IJAGR)*

- *International Journal of Digital Earth*
- *International Journal of Disaster Risk Science*
- *ISPRS International Journal of Geo-Information*
- *ISPRS Journal of Photogrammetry and Remote Sensing*
- *International Journal of Geographical Information Science (IJGIS)*
- *Journal of Environmental Management*
- *Journal of Environmental Management*
- *Journal of Spatial Science*
- *Journal of Geographic Information Science*
- *Journal of Geographical Systems*
- *Journal of Medical Internet Research (JMIR)*
- *Journal of Location-Based Services*
- *Journal of Maps*
- *Landscape and Urban Planning*
- *Nature Hazards*
- *Pacific Symposium on Biocomputing (PSB)*
- *PLOS ONE*
- *Photogrammetric Engineering and Remote Sensing,*
- *Proceedings of the National Academy of Sciences (PNAS)*
- *Professional Geographers*
- *Royal Society Open Science*
- *The Cartographic Journal*
- *The Internet Encyclopedia (published by John Wiley & Sons, Inc.)*
- *The Professional Geographer*
- *Transactions in GIS*

Membership in Professional Organizations

- American Association of Geographers (1999 – present, life member)
- American Congress on Surveying and Mapping and Cartography and Geographic Information Science Community (2000 – present, life member)
- The International Association of Chinese Professionals in Geographic Information Science (CPGIS) (2013 – present, life member)
- Urban and Regional Information Systems Association (2003-2005)
- The North American Cartographic Information Society (2009 – 2011)

Academic Colloquia, Speeches, and Keynotes (invited):

- 2023, May 13, Tsou, Ming-Hsiang, **Keynote Speech:** Transform Geographers into Metaverse Navigators: Mapping the Information Landscapes with Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), **The 27th International Geographical Conference of Taiwan**, Taipei, Taiwan.
- 2023, April 11, Tsou, Ming-Hsiang, Invited Colloquium: Enabling Precision Public Health with Big Data Analytics and GIS: A Case Study for COVID-19 Outbreaks and Interventions,

Research Center for Humanities and Social Sciences, Academia Sinica, Taipei, Taiwan.

- 2020, April 23, Tsou, Ming-Hsiang. Invited Presentation on “Using Geo-Tagged and Geo-Targeted Social Media Data for COVID-19 Contact Tracking and Monitoring”, **Digital Contact Tracing and Surveillance: A National Geospatial Conversation**. Webinar hosted by Arizona State University’s Spatial Analysis Research Center.
- 2020, March 04. Tsou, Ming-Hsiang. Interests of Society or Rights of Individuals? Promises and Challenges of Social Media and Big Data. Guest Speaker on **the Center for Ethics in Science & Technology**, UCSD TV. <https://www.ucsd.tv/search-details.aspx?showID=35460&subject=sci>
- 2019, February 20, Caroline A. Thompson and Ming-Hsiang Tsou, “Improving researcher accessibility to publicly available data through creative integration, geospatial visualization, and open data portals”, (**invited plenary speech**). **American Association for Cancer Research (AACR) Conference** on Modernizing Population Sciences in the Digital Age, San Diego, California.
- 2019, June 25, Tsou, Ming-Hsiang, “Utilize Social Media and Big Data to Build a Real-time Disaster Management System” (**Keynote**), In the 2019 International Training Workshop for Natural Disaster Reduction (Workshop #2 on Social Media), Taipei. Taiwan.
- 2019, February 27, Tsou, Ming-Hsiang, “Active Social Media Analytics for Emergency Management and Public Health Issues”, (**Keynote**), Workshop: Perception is Reality: Utilizing Social Media in Emergency Response, Waco, TX.
- 2018, October 28, Tsou, Ming-Hsiang, “Implementing a Real-Time Disaster Monitoring and Evacuation System with GIS Traffic Models and Big Data Analytics” (**invited paper session**), In Digital Heritage 2018 - Pacific Neighborhood Consortium (PNC) Session, 2018, San Francisco, CA.
- 2018, September 8, Tsou, Ming-Hsiang, “The Integration of Data Science and GIS curricula for Geospatial Big Data Analytics and Spatial Analysis and Modeling”, (**invited plenary speech**). In the 2018 International Conference on Spatial Analysis and Modeling, Tokyo, Japan, September 8 - 9, 2018.
- 2018, May 23, Ming-Hsiang Tsou, Building a Real-time Disaster Monitoring, Evacuation, and Management System with GIS and Big Data. (Invited speech) at the National Science and Technology Center for Disaster Reduction, Taiwan.
- 2018, January 13. Ming-Hsiang Tsou. **Invited plenary speech**. *Using Social Media and Geospatial Big Data to Study Human Dynamics and Computational Social Science*. The 5th International Conference of Spatial Information Intelligent Services (SIIS), Wuhan, China. January 13, 2018.
- 2017, August 03, Ming-Hsiang Tsou. *Building a Lightweight Web Mapping and Analytic Application for Visualizing Health Disparities*, the 25th International Conference on Geoinformatics, Buffalo, New York, August 2-4, 2017.
- 2017, August 07, Ming-Hsiang Tsou, *Estimating Hourly Population Distribution Change at High Spatiotemporal Resolution in Urban Areas using Geo-Tagged Tweets, Land Use Data, and Dasyetric Maps*, In 2017 International Symposium on Spatiotemporal Computing (ISSC), Aug 7-9, 2017, Boston, MA.
- 2017, October 17, Ming-Hsiang Tsou, “Spatiotemporal Modeling of Human Dynamics Across Social Media and Social Networks”, National Institute of Drug Abuse (NIDA). **Invited speech**,

Workshop: Social Media, Mobile Technology and Youth Risk Behaviors, Neuroscience Center, Bethesda, MD

- 2017, March 22, Ming-Hsiang Tsou, “Big Data Analysis of Human Dynamics in the Age of Mobile Devices and Social Media”, Data Science focused talks, the San Diego IEEE Computational Intelligence chapter, QRC-119B (Qualcomm Research Center).
- 2017, June 07, Ming-Hsiang Tsou, Big Data and Impact on Geospatial Education. (invited plenary speech). GeoEd’ 17 Conference, Jefferson Community & Technical College, Louisville, KY.
- 2017, December 06, Ming-Hsiang Tsou, Teaching Big Data Analytics and Geospatial Data Science for GIS Programs. Esri EDC International Community Web Meeting Session: Big Data Analytics
- 2017, May 01, Ming-Hsiang Tsou, Combining Big Data, Social Media (Twitter) and Web GIS for Disaster Response and Evacuation Planning: Geo-targeted Event Observation (Geo) Viewer, 71th California Geographical Society's Annual Conference, April 29-May 1, 2017, El Cajon, California.
- 2017 UCSD Health Data Institute Ming-Hsiang Tsou. Invited Seminar Lecture at the **Health Data Exploration Summer Institute 2017**, Cal(IT)2, UC San Diego. *Big Data and Human Dynamics: Integrating Personal Health Data with Social Media and GIS*.
- 2016, July 18. Ming-Hsiang Tsou: Keynote Speech at the 2016 ISPRS Congress. “Sensing the Invisible and Mapping the Future: Use Social Media and Big Data to Monitor Human Dynamics”. **XXIII International Society for Photogrammetry and Remote Sensing (ISPRS) Congress**, July 12-19, 2016, Prague, Czech Republic.
<http://slideslive.com/38897729/sensing-the-invisible-and-mapping-the-future>
- 2016, July 8. Ming-Hsiang Tsou. Invited Colloquium Speech. “Big Data and Human Dynamics: A Human-Centered Approach to Analyze Human Activities and Movements with Social Media and GIS data”, Chadwick Building 102, University College London, London, UK.
- 2016, July 15. Ming-Hsiang Tsou. Invited Seminar Lecture at the **Health Data Exploration Summer Institute 2016**, Cal(IT)2, UC San Diego. *Big Data and Human Dynamics: Integrating Personal Health Data with Social Media and GIS*.
- 2016, June 03. Ming-Hsiang Tsou. Invited Talk at the NCDR, Taiwan. Improve Disaster Communication Using Social Media (Twitter) with Spatial, Temporal, and Content Analysis: Case Studies for 2014 San Diego Wildfires and 2015 Nepal Earthquake.
- 2016, July 03, 2016. Ming-Hsiang Tsou. Invited Seminar Talk at the Geography Department, National Taiwan University. *A New Paradigm Shift in Higher Education: Big Data, Hackathons, Startups, and Active Team-based Learning Platforms*.
- 2016, June 02. Ming-Hsiang Tsou. Seminar Talk at Department of Electrical Engineering, National Cheng Kung University. Taiwan. *Analyzing and Visualizing Big Data from a Spatiotemporal Perspective with Web-based Analytic Tools and Social Media*.
- 2016, April 17. Ming-Hsiang Tsou. SDSU Statistics Seminar: *Analyzing Big Data from a Spatiotemporal Perspective with Web-based Analytic Tools and Social Media*. Department of Math and Statistics. San Diego State University.
- 2015, 11/11. University of Redland / ESRI campus Colloquium. “Using Social Media (Twitter) and Big Data to Build Real-Time Spatiotemporal Analytics (Case Studies in Tracking Disaster Responses and Disease Outbreaks)”.

- 2015, 8/21. **Invited keynote speaker** in Transformation, Innovation, and Impact in Social Work Research Workshop, College of Social Work, The Ohio State University. Presentation Title: *“Using Social Media (Twitter) and Big Data to Create Real-Time Spatiotemporal Analytics for Social Work”*.
- 2015, 7/13. **NIH Big Data Workshop: Harnessing “Big Data” to Stop HIV**. Invited Presentation, “Twitter & Social Media in Public Health Research”.
<https://www.youtube.com/watch?v=9wY81zlBoqE>
- 2014, 6/26. 2014 **Keynote speaker, TGIS Geoinformatics UGIS Joint International Conference**, Kaohsiung, Taiwan. *“Knowledge Discovery in Big Data: A Research Frontier of GIScience”*.
- 2014, 5/24, **Taiwan Geography Conference Keynote Speaker**: *“Visualizing and Mapping Big Data: A New Research Frontier in GIS and A New Opportunity for Geography Education.”* National Taiwan Normal University.
- 2014, 5/23, Invited Speech at **Taiwan National Science and Technology Center for Disaster Reduction**. *“Using Big data and social media for disaster warning, evacuation, and recovery.”*
- 2014, 6/02 Beijing Union University Colloquium : *“Building Smarter Cities with Big Data and Social Media.”*
- 2014, 5/30 Beijing Forest University Colloquium: *“Using Big Data and GIS for Forest Resource Management.”*
- 2014, 5/29 China Geological Info Key Lab Seminar: *“The Future of Internet GIS: Linking Cloud Computing and Mobile Technology.”*
- 2014, 5/27 Taiwan Feng-Chia University. Colloquium *“GIS Research Opportunities in Big Data and Social Media Analytics.”*
- 2014, 5/26 National Taiwan Ocean University Colloquium: *“Using Big Data for Environmental Monitoring and Fishery Resource Management.”*
- 2013, September 18. University of Redlands, Colloquium: *“Golden Opportunity: Mining Big Data and Social Media with GIS and Spatial Analytics.”* at the Center for Business GIS and Spatial Analysis.
- March 29, 2012. Invited **Colloquium at National Taiwan University**. Department of Geography. *“Rediscovering Geography with Internet GIS and Virtual Globes: Case studies in Disaster Management and GIS Education”*.
- March 17, 2012. **Keynote Speech at the 8th Taipei International Digital Earth Symposium TIDES 2012** , May 14th ~ 18th, 2012 , Taipei, Taiwan. Conference Theme: Digital Earth : The Next Generation. *“Mapping Social Media and Diffusion of Innovations on Digital Earth: Revealing the Invisible World”*. <http://deconf.pccu.edu.tw/2012TIDES/en-speech-highlight-ks.html>
- March 16, 2012. Invited speech at **Academia Sinica**, Taipei, Taiwan. *“Research Challenges and Opportunities for Mapping Cyberspace and Social Networks”*, In Novel Geospatial Information Architecture and Services Workshop, Taipei, Taiwan.
- March 4, 2010. Invited speech at TELDAP International Conference, **Academia Sinica, Taipei, Taiwan (ROC)**, *“Developing Geospatial Cyberinfrastructure to Archive and Share Spatial Knowledge Digitally”*.
- March 1, 2010. Colloquium at the GIS Center, **Feng Chia University**, Taiwan. *“Using Web 2.0*

and Mobile GIS to Promote Geospatial Technology Education and GIScience Research”.

- May 21, 2009. **Invited keynote speech** at **FORMOSAT-2 5th Anniversary Conference**, National Space Office Program (NSPO), Hsinchu, Taiwan (ROC), *“The Integration of FORMOSAT-2 and NASA Imagery for San Diego Wildfire Emergency Responses and Web GIS Education”*.
- April 2, 2009. Colloquium at the Department of Geography, **University of Tennessee**. *“New Research Directions of Internet GIS and Web-based Spatial Decision Support Systems for Disaster Management.”*
- March 29, 2008. The GeoVisualization Colloquium Series, **Macalester College** in St. Paul, Minnesota. Title: *“New Research Directions of Internet GIS, and Web-based GeoVisualization for the San Diego 2007 Wildfires.”*
- March 11, 2008. **Invited keynote speech** at the Japan’s *“Curricula for Geographic Information Science”* conference, **the University of Tokyo**, Japan. Title: *“Integrating Web-based GIS, On-line Videos, and Collaborative Tools for GIS education”*. (<http://curricula.csis.u-tokyo.ac.jp/activity/t0311.php>).
- January 17, 2008, Colloquium at the Department of Geography, **UC Santa Barbara**. *“New Research Directions of Internet GIS and Web Mapping Services and Lessons Learned from the San Diego 2007 Wildfires.”*
- March 5, 2008, Colloquium at the Department of Geography, **National Taiwan Normal University**, Taiwan. Title: *“Future Research Directions of Internet GIS and Web Mapping Services and Lessons Learned from the San Diego 2007 Wildfires”*
- March 14, 2008, Colloquium at the Institute of Space and Earth Information Science, **the Chinese University of Hong Kong**. Title: *“New Research Directions of Internet GIS and Web Mapping Services and Lessons Learned from the San Diego 2007 Wildfires.”*
- March 17, 2008, Colloquium at the Department of Geography, **National University of Singapore**. Title: *“New Research Directions of Internet GIS and Disaster Management and Lessons Learned from the San Diego 2007 Wildfires”*.
- March 21, 2008, Colloquium at the Department of Geography, **National Taiwan University**. Title: *“Rediscovering Geography with Internet GIS and Virtual Globes: Case studies in Disaster Management and GIS Education”*.
- June 8th, 2005, Colloquium at Department of Geography, **National Taiwan Normal University**, Taipei, Taiwan. *“Internet GIS and Geospatial Information Technology”*.
- June 19th, 2005, Colloquium at **National Taiwan University**, Taipei, Taiwan. *Web-based Geospatial Technology*.
- June 14th, 2005. Colloquium at the Electronic Engineering Department, **National Cheng Kung University**. *The Impact of Internet GIS*.

VI. TEACHING AND EDUCATION INNOVATIONS:

- **Hosting the 2015, 2017, 2019, and 2022 Big Data Hackathon for San Diego**. The goal of Big Data Hackathon is to provide a collaborative platform for students to learn how to use big data and analytical tools/methods to develop projects that will benefit the San Diego community. 2015 themes: water drought and conservation, disaster response and

assistance, crime monitor and prevention, 2017 theme: public health, 2019 theme: Smart Living. The Big Data Hackathon for San Diego aims to promote Data Science and Big Data Analytics for both students and educators and demonstrate possible technological applications to solve various issues for San Diegans. Website:

<http://bigdataforsandiego.github.io/> The 2019 theme for the hackathon was Smart Living with 5 interesting fields including Smart City, Smart Environment, Smart Education, Smart Transportation and Smart Health. Over 200 students participated in the 2019 Hackathon. The 2022 theme was “Tackling Real-world Challenges in Healthcare”. Over 250 students participated in 2022 event.

- **New Curriculum: BDA/GEOG594 Big Data Science and Analytics Platform:** <http://map.sdsu.edu/bigdata/> This new course (first taught in Fall 2016, then in 2017, 2018, and 2019) introduces state-of-the-art computational platforms, tools, and skills for big data science and big data analytics with numerous real-world case studies. The big data field provides untapped potential for discovering and analyzing complex problems faced by humankind, including business analytics, disease outbreaks, traffic patterns, urban dynamics, and environmental changes. This class introduces big data platforms (Amazon EC2, Google Engine, and Windows Azure) and key concepts (cloud computing, virtualization, information privacy, and crowd sourcing) related to geospatial big data. Students will learn to how to use Google Cloud Platform, R, Gephi, ArcGIS Online, and Tableau to conduct big data analytics. The course will provide basic introduction to big database management related to NOSQL databases, Hadoop and MongoDB. This course will have both the hands-on training of analytics tools and computer skills, as well as the fundamental concepts for big data science with critical thinking. Students will have opportunity to create their own big data platform on Amazon EC2 virtual servers, manage their own databases in MongoDB, and access and collect big data from their interested applications (e.g. Twitter data and business datasets).
- **New Curriculum: GEOG583 Internet Mapping and Distributed GIServices:** <https://map.sdsu.edu/geog583> This is a new curriculum created by Tsou in Spring 2000, then taught from 2001 – present. This course introduces the state-of-the-art development of Internet mapping technologies and advanced cartographic skills for web-based or mobile maps. By using web-authoring tools and Internet Map servers (ArcGIS Server, ArcGIS online, Google Map APIs, MapBox, Carto, etc.), students can learn both the techniques of Internet mapping and the principles of interactive cartography, including multimedia, animation, and user interface design. This Internet mapping curriculum was selected as one of the most popular Internet GIS courses by the Online GIS Monitor magazine. This course has been adopted or referenced by many GIS educators in multiple universities.
- **New Curriculum: GEOG104 Geographic Information Science and Spatial Reasoning (at the General Education level).** This new GEOG104 curriculum was designed by Tsou in Fall 2005 and was first taught in Fall 2006. This course is designed to provide fundamental concepts in geographic information systems, cartography, remote sensing, spatial statistics, and global positioning systems. This new Geography 104 course was approved as the General Education (GE) course by the University Senates on March 7, 2006 at SDSU. This course is

the first lower-division GIS class under the GE category of Mathematics /Quantitative Reasoning in the Foundations of Natural Science and Quantitative Reasoning within the CSU system. Many community colleges have created similar GIS courses (San Diego Mesa College, Southwestern College, Grossmont College, and San Diego City College) to articulate this new course with SDSU. This course also becomes one fundamental core course for both B.S. program and B.A. program at the Department of Geography. All geography major students are required to take GEOG104 since Fall 2009. The units of this course can also be used for the Geographic Information Science Certificate Program at SDSU. This new course was recognized by the National Geospatial Technology Center (GeoTech Center) as a new model curriculum for GIS education in General Education (Yanow, 2009, GeoTech Center white paper).

- The **GIS iBook** development: the "Introduction to GIScience" Collaborative Textbook Project for iPad devices. Editors: Ming-Hsiang Tsou, Yi-Ting Chung (graduate student) and Cynthia Paloma (graduate student). Many younger students today prefer interactive digital textbooks to print versions, and have access to iPads in K-12. The Introduction to GIScience textbook project provides students with a collaborative opportunity to learn and engage GIScience content with a free interactive digital textbook formatted on iPads. URL: <http://mappingideas.sdsu.edu/ibook/>
- GIS Career and Education Awareness website and online learning modules: <http://geoinfo.sdsu.edu/hightech/>
- Geospatial Technology Summer Workshops for community college teachers and high school teachers (2009 – 2019): <http://geoinfo.sdsu.edu/hightech/GISWorkshop2012.htm>
- GIS Class Web Sites (San Diego State University): (including lecture notes, on-line forum, and web-based exercises).
 1. GEOG 104 (Geographic Information Science and Spatial Reasoning): <https://map.sdsu.edu/geog104>
 2. GEOG 381 (Computerized Map Design): <https://map.sdsu.edu/geog381/>
 3. GEOG 484 (Introduction to Geographic Information Systems): <https://map.sdsu.edu/geog484/>
 4. GEOG 583 (Internet Mapping and Distributed GIServices): <https://map.sdsu.edu/geog583/>
 5. GEOG 581 (Cartographic Design): <https://map.sdsu.edu/geog581/>
 6. Wireless mobile GIS: GEOG 789 Seminar (Spring 2010 Seminar): <https://map.sdsu.edu/GEOG780-mobileGIS-syllabus2010-final.pdf>
 7. Web Mapping and Social Media: GEOG 780 Seminar: (Fall 2012) <https://map.sdsu.edu/GEOG780-2015-Web-Mapping-and-Social-Media.pdf>
 8. GEOG/BDA 594 (Big Data Science and Analytics Platforms) <https://map.sdsu.edu/bigdata/index.html>
- Social Networking Media (Facebook) for Teaching Aids: a Facebook Page for the introduction of Geospatial Technology. (<http://www.facebook.com/pages/Geospatial-Technology-at-SDSU-GEOG104-GEOG381-GEOG583/129010146571?ref=mf>).
- YouTube Channel for Geospatial Technology:
URL: <http://geoinfo.sdsu.edu/hightech/GISVideos.htm>

HDMA YouTube: <https://www.youtube.com/channel/UCKiEJPhr3vRgNgFi5aD49VA>

VII. SERVICE TO THE UNIVERSITY AND THE COMMUNITY

Service to the Community

2020 -- present Established interactive Web-based mapping services for COVID-19 outbreaks in the County of San Diego: <https://hdma-sdsu.github.io/> With the collaborations from the faculty, staff, and students at San Diego State University and our partners in San Diego, we create this Research HUB for COVID-19. The purpose of the COVID-19 Research Hub is to provide Analytics Dashboard and Maps to help both decision makers and the public to monitor the COVID-19 disease outbreaks in San Diego and to get a better understanding about the different aspects of COVID-19 disease spread patterns related to vulnerable population, population profiles, and health services in San Diego.

2007 and 2003 Established interactive Web-based mapping services for San Diego Wildfire 2003 and 2007 [HTTPS://MAP.SDSU.EDU](https://map.sdsu.edu). This Web site (<https://map.sdsu.edu>) was created immediately on October 27, 2003 (Monday morning) to provide Web mapping services for helping our local community. This site was updated daily and provides maps of the San Diego wildfires with various live ArcIMS Web mapping services, static maps, and research articles. This Web site became an important resource for the local GIS community at San Diego during the wildfire incident. Many local governments (City of San Diego, County of San Diego) and related agencies (San Bernardino Joint Information Center, USDA Forest Service, Southern California Burned Area Emergency Response (BAER) team) and on-line news media (www.signonsandiego.com) refer to this website as one of the major resources for mapping San Diego wildfire.

Numerous e-mails are flooding in to thank SDSU for creating the site. Among them:

"I have been keeping track of the fires. My daughter is a sophomore and living in El Cajon. The maps from your department are fantastic! Thanks for putting them out there."

—a very worried parent

"Thanks for the map. It is very helpful in understanding what went on in San Diego."

—Anonymous, Long Island, New York

"I want to congratulate you and your colleagues on the magnificent Web site you created for the recent fires."

—Economics professor at UCSD

More information about this Web site can be found at the November 17 issue of SDSUniverse (<http://www.sdsuniverse.info/story.asp?id=11596>) and the 360 Magazine (Spring 2004) page 8.

On October 21, 2007. This website was activated again. Tsou was leading the San Diego GIS force group, a volunteer group by SDSU faculty and students to established interactive Web-based mapping services for the new San Diego Wildfire 2007 and for helping local San Diego community. Based on the Web server transaction logs, **236,693 unique visitors** visited the Web site during the first week of wildfires in 2007. The City of San Diego, the Southern California Burned Area Emergency Response (BAER) team, and the County's emergency fire information center created Web links from their wildfire pages to the website.

TV-News Interview:

2023, March 06, NBC 7 News - San Diego's South Bay Hit Hardest by COVID-19 Pandemic.

2014, October 20, CBS8News - SDSU professor to use Twitter to alert San Diegans

2014, October 15, KPBS – San Diego, SDSU Professor Selecting 'Tweeters' To Spread
Emergency Messages

2014, January 31, ABC10News – San Diego, 'SDSU researcher: Using Twitter to track the flu
could save lives'

2013, November 08, KPBS Interview: Social Media Analysis and the San Diego Mayor's
Race.

2013, December 3, Union Tribune San Diego, Researcher to Test if Twitter can help spot flu
trends.

2013, November 21, HuffPost, 'Twittter Could Tell You Where Flu is Ramping Up, Study
Suggests'

2013, November 19, ScienceDaily, 'Hashtag Health'

2013, November 9, News Center, 'Hashtag Health'

2012, November 15, KPBS, 'Using Twitter To Predict Elections—Or The Flu'. Tsou and Dipak Gupta, both San Diego State University professors, are part of a project called Mapping Ideas. The idea is to track and analyze publicly-accessible websites, as well as social media like Twitter and Facebook, for key words and phrases and then track their spread. The project tracked the frequency of mentions of "Obama" and "Romney" on Twitter the week before the election. [Click here to see this video on Youtube.](#)

<http://www.kpbs.org/news/2012/nov/15/using-twitter-predict-elections-or-flu>

November 30, 2005 KUSI/News (Morning News) interview. Introducing the recent wildfire research with GIS and remote sensing technologies.

June 20, 2002 KUSI/News (Morning News) interview. "The introduction of mobile GIS applications and related GIS/Remote Sensing research activity in geography department, SDSU" with Dr. Stow. (on-line archive: <http://advancement.sdsu.edu/marcomm/news/clips/Archive/Jun2002/062002/062002rod-geog2.mpg>)

San Diego Chinese American Science and Engineering Association (SDCASEA): President (2017), Board of Directors (2002 - 2004, 2012 - present) – nominated and elected in December 2016 as the President of the San Diego Chinese-American Science and Engineering Association (SDCASEA). SDCASEA is one of the major Chinese-American associations in San Diego area (290 members). The goal of this association is to facilitate the understanding of Chinese/Taiwanese culture and to provide student scholarships and community services to San Diego local communities.

Coordinate both Patrick Henry High School students (2007, 2008, 2009, 2010, 2011, 2012, 2013), Helix High School students (2006, 2007, 2008), and other local high school students (2014 – present) visits the GIS computer laboratory with half day tours (including one hour Web GIS demo by Tsou and one hour SDSU campus tour).

Exhibitor for Patrick Henry High School Engineering Academic Career Exploration Fair, 2009 and 2010. Introduce GIS technology for students as potential career paths.

VIII. MENTORING POSTDOCS AND VISITING SCHOLARS

PostDoc Mentoring:

1. Dr. **Calvin (Chin-Te) Jung**, Ph.D. graduated from National Taiwan University, PostDoc: 2014 – 2016, the Center for Human Dynamics in the Mobile Age, San Diego State University.
2. Dr. **Su Yeon Han**, Ph.D. graduated from San Diego State University/UC-Santa Barbara, PostDoc: 2016-2017, the Center for Human Dynamics in the Mobile Age, San Diego State University.

Hosted Visiting Scholars at San Diego State University:

- 2021 – 2023: Ph.D. Student, **Carol Maione**, a doctoral researcher at Politecnico di Milano (Milan, Italy). Her work is focused on multi-level monitoring and dynamic modeling of material flows and pollution cycles across the industrial and natural systems.
- 2022: Associate Professor **Wang, Yi-Chen**, Department of Geography, National University of Singapore. Expertise: Health GIS, Physical Geography (six months).
- 2006: Professor **Kuo-Chen (Harry) Chang**, Department of Geography, National Taiwan Normal University (NTNU). Expertise: Remote Sensing, GIS, FORMOSAT II satellite image adoption (three months).
- 2012: Professor **Wang, Yandong**, the State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing (LIESMARS), Wuhan University. Expertise: Semantic Web, Geospatial Services (one year).

- 2014: Associate Professor **Chen, Feixiang**, School of Information Science and Technology, Beijing Forestry University. Expertise: Mobile GIS, GIS databases, Android Platform Application Development (one year).
- 2014: Associate Professor **Wang, Yi-Chen**, Department of Geography, National University of Singapore. Expertise: Health GIS, Physical Geography (six months).
- 2019: Associate Professor **Liu, Bo**, Faculty of Geomatics, East China Institute of Technology. Expertise: Digital Map Processing, Spatial topological relation; Spatial data conflation; Volunteered Geographic Information (one year).
- 2020. Dr. **Gabriela Fernandez**. Establishing the new Metabolism of Cities Living Lab (MOC-LL) at the Center of Human Dynamics in the Mobile Age.

VIII. STUDENTS AND POSTDOCS ADVISING

Ph.D. student advising (committee chair/advisor at San Diego State University):

1. Xiangyi Zhu (Ph.D. in Geography, in progress, 2023 -)
2. Jian Xu (Ph.D. in Geography, in progress, 2020 -)
3. Jaehee Park (Ph.D. in Geography, **graduated September 2024**). *The Role of Big Data in Understanding Urban Dynamics: Social Sensing, Mobility Patterns, and Place Connectivity During the COVID-19 Pandemic*.
4. Christopher Allen (Ph.D. in Geography, 2014 - 2020, **taking leave in Fall 2020**). *Understanding Livability in Urban Areas using Social Media, Remote Imagery, and GIS Data*. (Senior Engineer at Esri).
5. Jiue-An (Jay) Yang (Ph.D. in Geography, **graduated January 2017**). *Spatial-Temporal Analysis of Information Diffusion Patterns with User-generated Geo-Social Contents from Social Media*. (Geospatial Data Scientist at City of Hope (cancer research and treatment center)).
6. Su Yeon Han (Ph.D. in Geography, **graduated August 2016**). *Discovering Spatial Relationships between Cyberspace and Real Space and Re-examining Theories in Geography with Social Media and Big Data*. (Assistant Professor at Texas State University).
7. Ick Hoi (Rick) Kim (Ph.D. in Geography, **graduated August 2012**). *Developing High Performance GIS Simulation Models on Geospatial Cyberinfrastructure: A Case Study of Population Change Models with Grid Computing and Cloud Computing Technologies*. (Current Position: Associate Research Fellow at Korea Research Institute for Human Settlements).
8. Justin Shepard (Ph.D. in Geography, **taking leave in Fall 2010**). *VGI Credibility of Natural Disaster Response Reporting*. (Current position: Full time GIS analyst at the U.S. Department of Agriculture)
9. Tong Zhang (Ph.D. in Geography, **graduated December 2007**). *Developing Grid-enabled Internet GIS Service Portals to Support Geospatial Cyberinfrastructure: A Pilot Study in Accessibility*. (Current position: Professor at the National Key Laboratory for Information Engineering in Surveying, Mapping and Remote Sensing (LIESMARS), Wuhan University, P.R. China).

Ph.D. student advising (the second committee member at San Diego State University):

1. Jin, Chanwoo (Ph.D., **graduated in 2022**. Geography, San Diego State University). (Assistant Professor at Northwest Missouri State University).
2. Nana Luo (Ph.D. student, **graduated in 2020**. Geography, San Diego State University).
3. Nicole Simons (Ph.D. **graduated 2013**, San Diego State University). *Knowledge-based rapid assessment decision support tool for wildfire events*.
4. Christopher D. Lippitt (Ph.D. **graduated 2012**, San Diego State University). *Science on the Fast Track: Real-Time Remote Sensing for Earth Science and Environmental Management*.
5. John Ryan (Ph.D. in Geography, **graduated May 2004**, San Diego State University). *Using Spatial Updating Bias to Explore the Robustness of a Collaborative Geovisualization Model*.

Ph.D. student external committee member or examiners (outside SDSU):

1. Wei Huang (**graduated September 2016**, Department of Civil Engineering, Ryerson University). Dissertation Title: *Modelling Intra-Urban Human Activity Patterns using Crowdsourcing and Geosocial Media Data*.
2. Nastaran Pourebrahim (**graduated December 2019**), Department of Geography, Environment, and Sustainability, the University of North Carolina at Greensboro. Dissertation Title: *Human Dynamics in the Age of Big Data: A Theory-Data-Driven Approach*.
3. Yan Chen (**graduated August 2024**), School of Resource and Environmental Studies-Information Science, Dalhousie University. Dissertation Title: *Social media data and computer vision in social impact assessment: understanding human dimensions and cultural ecosystem services in hydroelectric landscapes*. (External Examiner).

Master student advising (committee chair/advisor):

1. Anna Mewkill (M.S. in GIScience, In Progress, 2024).
2. Alexandra Nguyen (M.S. in Big Data Analytics, In Progress, 2023)
3. Jiachen Wang (M.S. in GIScience, In Progress, 2023).
4. Melanie Lopez (M.S. in GIScience, **take leave in 2020**).
5. Christian Mejia (M.S. in GIScience, **graduated in December 2021**). *Virtual Reality Integration into Geography Education: A Case Study of Physical Geography*.
6. Karenina Nicoli H. Zaballa (M.S. in Big Data Analytics, **graduated in December 2021**). *"#iorestoacasa": Twitter and the 2020 COVID-19 Pandemic in Milan, Italy. A Temporal and Translation Comparison using Word Clouds and Frequency Tables, Pointwise Mutual Information, and Latent Dirichlet Allocation Topic Models*.
7. Haihong Huang (M.S. in GIScience, **graduated in May 2019**) *Development and Evaluation of HealthWebMapper: A Web-based User-friendly Geovisualization Tool for Cancer Disparities*.

8. Stefany Pickett (M.S. in GIScience, **graduated in August 2018**). *Analyzing Spatiotemporal Patterns of Pokémon Go Game Users and the Impacts of Users' Physical Activities.*
9. Hao Zhang (M.S. in GIScience, **graduated in August 2017**). *Building a Dynamic Population Distribution Model with Geo-Tagged Tweets (from Twitter) and Dasymetric Maps in Urban Area.*
10. Alejanadra Coronado (M.S. in GIScience, **graduated in August 2017**). *Spatial Associations and Network Dynamics between the Vaccine Exemption Discussion in Twitter and the Corresponding Geographic Space*
11. Qinyun Zhang (M.S. in GIScience, **graduated in August 2017**). *Building Dynamic Ontological Models for Place Names using Social Media Data from Twitter and Sina Weibo,*
12. Joey Lee (M.S. in GIScience, **graduated in August 2017**). *Mapping tourist behavior hotspots through photo-sharing service data.*
13. Cynthia Paloma (M.S. in GIScience, **graduated in July 2016**) *Developing a Collaborative Multimedia Learning Platform for GIScience Education: A Case Study in Designing an Interactive Textbook for iPad.*
14. Jessica Dozier (M.S. in GIScience, **graduated in May 2016**). *Improve Disaster Communication in Online and Offline Communities Using Social Media (Twitter) and Big Data.*
15. Elias Issa (M.S. in GIScience, **graduated in May 2016**). *Understanding the Spatio-Temporal Characteristics of Twitter Data with Geo-tagged and Non Geo-tagged Content: Two Case Studies with the Topic of Flu and Ted (Movie).*
16. Lesley Handa (M.S. in GIScience, **graduated in December 2015**). *Examining the Past, Present and Future Conservation of the Wintering Waterbirds in Mission Bay using GIS Field Methods and Climate Change Modeling.*
17. Yi-Ting Chung (M.S. **graduated in May 2015**) *Utilizing Mobile Technology in GIS Education: A Case Study of Using iPad and iBook in Fieldwork and Location Based Exercise.*
18. Philip Elder (M.S. in GIScience, **graduated in May 2013**) *Designing and Implementing a Web Mapping Service with User-Centered Design and the Sensor Web: A Case Study in the San Diego River Watershed.*
19. Daniel Lusher (M.S. in GIScience, **graduating in May 2013**) *IP Addresses: Exploring the nature of the geographic data and the patterns that can be extracted.*
20. Nicole Stotz (M.S. in GIScience, **graduating in May 2015**) *Usability Evaluation of Google Fusion Table for the Display of Very Large Datasets.*
21. John Urata (M.S. in GIScience, , **graduated in December 2012**). *Examining Mobile Phone Locational Privacy with Twitter's Social Networking Application.*
22. Jennifer Smith (M.S. in GIScience, **graduated in August 2011**) *Effective Animation Techniques for 3D visualizations of urban landscapes with a spatial and temporal dimension.*
23. Jeremy Hamm (M.S. in GIScience, **graduated in December 2010**). *The Optimization of a Street Network Model for Emergency Response Analysis within a GIS.*
24. Diana Smith (M.S. in GIScience, **graduated in May 2010**). *Formalizing and Evaluating Principles of Web-Based Animated Cartography Using Arctic Sea Ice Examples.*

25. Justin H. Shepard (M.S. in GIScience, **graduated in August 2009**). *Web-based GIS modeling in an adaptive management framework: A case study of the Carlsbad Habitat Management Plan.*
26. Lynn Ford (M.S. in GIScience, **graduated in August 2009**) *An Open Source Approach To Develop Web-Based Remote Sensing Tools for Clementine Lunar Imagery Analysis and 3D Visualization.*
27. Kenneth Garner Smith Jr. (M.S. in GIScience, **graduated in May 2009**). *Geovisualization and Spatial Statistical Analysis of Demographic Characteristics and Auto Collision Frequency.*
28. Charles Adler (M.S. in GIScience, **graduated in May 2008**). *Designing an Informationally Supportive Three-Dimensional Web Mapping Application for Urban Planning: A Case Study for Centre City Development Corporation (CCDC), a Redevelopment Agency.*
29. Kimberly Dodson (M.S. in GIScience, **graduated in August 2008**). *Designing Web-based Mapping Tools for Transportation Decision Making: A Case Study of Traffic Census in San Diego.*
30. Ting-Hwan Lee (M.S. in GIScience, **graduated in August 2008**). *Visualizing Web-based Information Dissemination and Diffusion Patterns: A Case Study for San Diego Wildfire 2003.*
31. Nathan G. Mendenhall (M.S. in GIScience, **graduated in 2007**). *Applying User-Centered Design Method for the Development of Web-based Mapping Services: Case Study with Biology and Environmental Planning.*
32. Jung Eun (Jesse) Hong (M.S. in GIScience, **graduated in 2007**). *Integrating a Real-Time Mobile Geographic Information System and a Web-Based Mapping Application for Campus Safety: A Case Study at San Diego State University.*
33. Jing-Yi Chen (M.S. in GIScience, **graduated in 2006**). *Web-Based GIS for High School Teachers and Students: A New Approach to Teaching and Learning with GIS.*
34. Andy Gordon (M.S. in GIScience, **graduated in 2006**). *Accommodating Hypsometrically Tinted Maps for Color-Vision.*
35. David Palomino (M.S. in GIScience, **graduated in 2005**) *Geographic Visualizations within a Web-based Mapping Environment for Water Resource Management.*
36. Judd M. Curran (M.A. in Geography, **graduated in 2005**) *Web-based Geospatial Information Services and Analytical Tools for Management of Real-time Surface Water Hydrology.*
37. Susmita Panchal (M.S. in GIScience, **graduated in 2005**) *Intranet-based GIS for Environmental Compliance Management in a Gas and Electric Utility (Geography).*
38. Yuying Li (M.A. in Geography **graduated in 2003**) *Software Agent-based Intelligent Data Processing System for Environmental Models.*
39. Rasmus H. Larsen (M.A. in Geography, **graduated in 2003**) *Distributed Cartographic Knowledge Bases: An Intelligent Software Agent Approach (Geography).*
40. Liang Guo (M.A. in Geography, **graduated in 2003**) *Web-based Geospatial Information Services and Analytical Tools for Natural Habitat Conservation and Management.*

Master student advising (the second reader or third committee member, or outside SDSU):

1. Jessica Embury (M.S. in GIScience, **graduated in 2023**). *“Independent Data Validation to Detect Biases in Synthetic Populations”*
2. Bonnie-Elene Deal (MA in School of Communication, SDSU, **graduated in 2019**). *“I Definitely Did Not Report It When I Was Raped... #WeBelieveChristine #MeToo”: A Content Analysis of Disclosures of Sexual Assault on Twitter.*
3. Saipriyati Singh (MS in Electrical Engineering, SDSU, **graduated in 2019**). *Non- Intrusive Activity and Presence Detection for Multiple People Using Low Resolution Ambient Sensors.*
4. Yogesh Kohli (MS in Computer Science, SDSU, **graduated in Fall 2018**). *Development of the EyesOnCrops: A new iOS app to visualize the NASA’s NDVI data.*
5. Sagar Dnyanoba Shelke (MS in Electrical Engineering, graduated in 2018). *Localization and Activity Detection in Smart Spaces.*
6. Cheng-Chia Huang (MS in GIScience, University of Utah, **graduated in Summer 2017**). *Developing a Data Mining Framework to Identify a Sense of Gentrification through Social Media Data: A Case Study Using Instagram Posts in Salt Lake City, Utah.*
7. Ashley Aure (MA in Linguistics, SDSU, **graduated in 2017**). *The Classification of SB277 and Temporally-Varied Twitter Data.*
8. Chelsea Obrochta (MPH in Public Health, SDSU, **graduated in Spring 2017**). *Ethnic and Geographic Disparities in the Receipt of Guideline Concordant Treatment in Colorectal Cancer Patients.*
9. Anoshe Aslam (MPH in Public Health, SDSU, **graduated in 2014**). *The Reliability of Tweets as a Supplementary Method of Seasonal Influenza Surveillance.*
10. Anna Nagel (MPH in Public Health, SDSU, **graduated in 2013**). *The complex relationship of real-space events and messages in cyberspace: A case study of influenza and pertussis using tweets.*
11. Marilyn Stowell (M.S. in GIScience, SDSU, **graduated in 2014**). *Examining a Knowledge Domain: Interactive Visualization of the Geographic Information Science and Technology Body of Knowledge.*
12. Joseph Saltenberger (M.S. in GIScience, SDSU, **graduated in 2011**). *An Interactive Web-Based Atlas for the Spokane Valley-Rathdrum Prairie Aquifer.*
13. Bahador Nosrat (M.S. in GIScience, SDSU, **graduated in 2010**) *Identifying Spatial Relationships Between Microbial Metabolism and Human Impact.*
14. Leigh Schwartz (M.A. Geography, SDSU, **graduated in 2004**) *The Digital Ground Beneath Our Feet: Cultural Geography in the Suikoden Video Game Series.*
15. Mark T. Cunningham (M.A. Geography, SDSU, **graduated in 2001**) *The San Diego Bay Marine Information System: The Application of a Real-time Geographical Information System to Maritime Operational Decision Making.*