Jill P. Naiman

I. Personal History and Professional Experience

A. Educational Background

- University of California, Santa Cruz, CA; Ph.D., Astronomy & Astrophysics; May 2014
- University of California, Santa Cruz, CA; M.S., Astronomy & Astrophysics; May 2009
- University of Los Angeles, CA; B.S., Astronomy & Astrophysics; June 2005

B. List of Academic Positions since Final Degree

2020 - Present Teaching Assistant Professor, School of Information Sciences, University of Illinois Urbana-Champaign

2020 - Present Faculty Affiliate, National Center for Supercomputing Applications, University of Illinois Urbana-Champaign

2014-2018 Postdoctoral Fellow, Institute of Theory and Computation, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA

C. Other Professional Employment

2018 - 2020 Adjunct Lecturer, School of Information Sciences, University of Illinois Urbana-Champaign

2019 - 2020 Software Developer, World Wide Telescope, University of Illinois Urbana-Champaign & Cambridge, MA

2019 - 2020 Instructor, Harvard Pre-College Program, Cambridge, MA

2016 - 2020 Visiting Scholar, National Center for Supercomputing Applications, University of Illinois Urbana-Champaign

2005 - 2006 Researcher, Prof. Andrea Ghez's Galactic Center Group, University of California, Los Angeles, CA

D. Honors, Recognition, and Outstanding Achievements

2022 Invited Conference Paper follow-up journal submission, Theory and Practice on Digital Libraries (TPDL)

2022 Outstanding SPIN (Students Pushing INnovation) mentor, National Center for Supercomputing Applications, UIUC

2022 Teachers Ranked as Excellent, UIUC

2021 Teachers Ranked as Excellent, UIUC

2021 Fiddler Faculty Fellowship, National Center for Supercomputing Applications, UIUC

2021 Outstanding SPIN (Students Pushing INnovation) mentor, National Center for Supercomputing Applications, UIUC

2017 Institute of Theory and Computation Prize Postdoctoral Fellowship, Harvard-Smithsonian Center for Astrophysics

2014 National Science Foundation Postdoctoral Fellowship, Harvard-Smithsonian Center for Astrophysics

2014 Chancellor's Achievement Award For Diversity, University of California, Santa Cruz

2013 ARCS Scholar, University of California, Santa Cruz

2012 Departmental Mentoring Award, University of California, Santa Cruz

Group Awards

2019 "Birth of Planet Earth" (documentary) - in collaboration with the Advanced Visualization Laboratory at the National Center for Supercomputing Applications

- Best Scientific Visualization and Data Analytics Showcase award at IEEE Supercomputing in Denver, CO, 2019
- Electronic Theater, Official Selection: Photosynthesis in a Chromatophore, Excerpt from "Birth of Planet Earth," SIGGRAPH Asia, Brisbane, Australia, 2019
- Computer Animation Festival, Official Selection: Formation of the Moon, Excerpt from "Birth of Planet Earth," SIGGRAPH Asia, Brisbane, Australia, 2019
- Best Soundtrack Award, Immersive Film Festival, Espinho, Portugal, 2019
- Honorable Mention, "For the value of the work as a whole which involves detailed scientific visualizations associated with an enormous artistic beauty," Immersive Film Festival, Espinho, Portugal, 2019
- Best Educational Dome Film, DTLA Film Festival, Los Angeles, CA, 2019
- Official Selection, Immersive Film Festival, Espinho, Portugal, 2019
- Official Selection, Astra Film Festival, Romania, 2019
- Director's Award, Fulldome Festival Brno 2019
- Electronic Theater, Official Selection: Photosynthesis in a Chromatophore, Excerpt from "Birth of Planet Earth," SIGGRAPH 2019
- Best Astronomical Visualizations, Reflections of the Universe Fulldome Festival, Yaroslavl 2019
- Official Selection, Macon Film Festival 2019

E. Invited Lectures and Invited Conference Presentations

Scientific Digitization Talks

2022 “The Reading Time Machine Project: Document Layout Analysis for Scientific Article Figure & Caption Extraction"; AEOLIAN (Artificial Intelligence for Cultural Organizations) Workshop 5: “Making More Sense With Machines", online, November 29, 2022

Visualization Talks

2020 “GitHub for Online Data Science Resumes"; TechReady Illinois, Discovery Partner's Institute, Online, November 10, 2020

2020 “Visualizing Data"; CARLI Counts Webinar, Champaign, IL, September 21, 2020

2019 “How to not lie with data"; CARLI Counts Webinar, Champaign, IL, November 18, 2019

2018 “Visualizing Science"; Center for Computational Astrophysics, Simons Foundation, New York, December, 12, 2018

2018 “ytini for Cinematic Visualization in Houdini"; National Center for Supercomputing Applications, Champaign, IL, June, 13, 2018

2018 “Visualizing Astronomy: How do we learn stuff from big datasets?"; American Museum of Natural History, New York, May, 1, 2018

2016 “Visualization for Astrophysics"; National Center for Supercomputing Applications, Illinois, September 21, 2016

2016 “Visualization Techniques in Astronomy"; Pixar University, Pixar Emeryville Campus, August 25, 2016

Selected Computational Astrophysics Talks

2018 “Modeling the Universe: Cosmological Simulations of Elemental Production"; Center for Astrophysics Summer Colloquium, Cambridge, MA, July, 19, 2018

2018 “Chemical Evolution in Simulations of Galaxy Formation: Elemental Evolution in IllustrisTNG"; APS Meeting, Columbus, OH, April 14, 2018

2017 “Elemental Evolution in Cosmological Simulations"; UIUC Colloquium, Champaign, IL, September 13, 2017

2017 “R-process elements in the IllustrisTNG Simulations"; Nebular Emission Modeling Workshop, Cairns, AU, May 21, 2017

2017 “The IllustrisTNG Simulations: Elemental Evolution in Cosmological Simulations"; University of Wisconsin Madison Colloquium, May 4, 2017

2016 “Should I Stay or Should I Go: Effects of Stellar Winds on Gas Retention and Expulsion in Star Clusters"; MODEST Meeting, NYC, Sept 10, 2016

2015 “Recent Star Formation in Dwarf Galaxies?"; Amherst/UMass Physics and Astronomy Colloquium, Feb 19, 2015

2015 “Recent Star Formation in Dwarf Galaxies?"; Amherst/UMass Physics and Astronomy Colloquium, Feb 19, 2015

F. Offices Held in Professional Societies
None.

G. Editorships of Journals or Other Learned Publications
None.

H. Grants Received

2023-2026 NIH - WormAtlas: Center for C. elegans Anatomy; co-I

- In collaboration with Crop Sciences & ACES, Advanced Visualization Lab (NCSA), Albert Einstein College of Medicine.
- Total Amount: $2,600,000
- Annual effort allocated: 3.1%

2021-2024 NASA ADAP - The Reading Time Machine: Transforming Astrophysical Literature into Actionable Data; PI

- In collaboration with Harvard-Smithsonian Center for Astrophysics.
- Total Amount: $506,912
- Annual effort allocated: 8.3%

2021-2024 The Brinson Foundation - Civic Science Fellowship; co-PI

- In collaboration with Advanced Visualization Lab (NCSA).
- Total Amount: $246,000
- Annual effort allocated: 1.9%

Grants for Computational Time

2023 - Accelerate Foundation Models Research Grant, Microsoft; co-PI

- In collaboration with UniverseTBD team
- $20,000 Azure credits for ChatGPT API and model training

2020-2021 - Blue waters allocation; PI

- In collaboration with Advanced Visualization Lab (NCSA)
- 150,000 node-hours (∼$93,045), 150TB on-line file space

I. Review Panels

2022 Panelist, National Center for Supercomputing Applications Faculty Fellows review committee

2022 Panelist, National Center for Supercomputing Applications Fiddler Fellows review committee

2021 Panelist, NASA Astrophysics Data Analysis Program

II. Publications and Creative Works

\# Denotes any publication derived from the candidate's thesis.
∗ Denotes publication that has undergone stringent editorial review by peers.
\+ Denotes publication that was invited and carries special prestige and recognition.
F For promotion to Full Professor, denotes new publication since last promotion at Illinois.
† Denotes a student author.

A. Doctoral Thesis Title

Gas Retention and Accumulation in Stellar Clusters and Galaxies: Implications for Star Formation and Black Hole Accretion

B. Books Authored or Co-Authored (*in print or accepted*)

None.

C. Books Edited or Co-Edited (*in print or accepted*)

None.

D. Chapters in Books (*in print or accepted*)

None.

E. Monographs (*in print or accepted*)

None.

F. Articles in Journals (*in print or accepted*)

Digitization and Machine Learning

2023 *__J. P. Naiman__, P. K. G. Williams, and A. Goodman, "The Digitization of Historical Astrophysical Literature with Highly-Localized Figures and Figure Captions," *International Journal on Digital Libraries*, pp. 1–21, Feb. 2023. https://doi.org/10.1007/s00799-023-00350-9

2020 *†P. D. Aleo, S. J. Lock, D. J. Cox, S. A. Levy, **J. P. Naiman**, †A. J. Christensen, †K. Borkiewicz, and R. Patterson, "Clustering-informed cinematic astrophysical data visualization with application to the Moon-forming terrestrial synestia," *Astronomy and Computing*, vol. 33, p. 100424, Oct. 2020. https://doi.org/10.1016/j.ascom.2020.100424

Information and Scientific Visualization

2023 *E. A. Jensen, K. Borkiewicz, **J. P. Naiman**, S. Levy, and J. Carpenter, "Evidence-based methods of communicating science to the public through data visualization," *Sustainability*, vol. 15, no. 8, p. 6845, 2023. https://doi.org/10.3390/su15086845

2022 *E. A. Jensen, K. M. Borkiewicz, and **J. P. Naiman**, "A new frontier in science communication? what we know about how public audiences respond to cinematic scientific visualization," *Frontiers in Communication*, vol. 7, p. 840631, 2022. https://doi.org/10.3389/fcomm.2022.840631

2019 *†K. Borkiewicz, **J. P. Naiman**, and †H. Lai, "Cinematic Visualization of Multiresolution Data: Ytini for Adaptive Mesh Refinement in Houdini," *Astron. J.*, vol. 158, p. 10, July 2019. https://doi.org/10.3847/1538-3881/ab1f6f

2017 ***J. P. Naiman**, †K. Borkiewicz, and †A. J. Christensen, "Houdini for Astrophysical Visualization," *PASP*, vol. 129, p. 058008, May 2017. https://doi.org/10.1088/1538-3873/aa51b3

2016 **J. P. Naiman**, "AstroBlend: An astrophysical visualization package for Blender," *Astronomy and Computing*, vol. 15, pp. 50–60, Apr. 2016. https://doi.org/10.1016/j.ascom.2016.02.002

Selected Astrophysics (High-Impact and Student) Publications

2020 *†M. Gallegos-Garcia, B. Burkhart, A. L. Rosen, **J. P. Naiman**, and E. Ramirez-Ruiz, "Winds in Star Clusters Drive Kolmogorov Turbulence," *ApJL*, vol. 899, p. L30, Aug. 2020. https://doi.org/10.3847/2041-8213/ababae

2020 *B. Burkhart, S. M. Appel, S. Bialy, J. Cho, †A. J. Christensen, D. Collins, C. Federrath, D. B. Fielding, D. Finkbeiner, A. S. Hill, J. C. Ibáñez-Mejía, M. R. Krumholz, A. Lazarian, M. Li, P. Mocz, M. M. Mac Low, **J. P. Naiman**, S. K. N. Portillo, B. Shane, Z. Slepian, and Y. Yuan, "The Catalogue for Astrophysical Turbulence Simulations (CATS)," *ApJ*, vol. 905, p. 14, Dec. 2020. https://doi.org/10.3847/1538-4357/abc484

2020 ***J. P. Naiman**, †M. Soares-Furtado, and E. Ramirez-Ruiz, "Modelling gas evacuation mechanisms in present-day globular clusters: stellar winds from evolved stars and pulsar heating," *MNRAS*, vol. 491, pp. 4602–4614, Feb. 2020. https://doi.org/10.1093/mnras/stz3353

2020 *†P. I. Karpov, D. Martizzi, P. Macias, E. Ramirez-Ruiz, A. N. Kolborg, and **J. P. Naiman**, "The Effects of Metallicity and Abundance Pattern of the ISM on Supernova Feedback," *ApJ*, vol. 896, p. 66, June 2020. https://doi.org/10.3847/1538-4357/ab8f23

2018 ***J. P. Naiman**, A. Pillepich, V. Springel, E. Ramirez-Ruiz, P. Torrey, M. Vogelsberger, R. Pakmor, D. Nelson, F. Marinacci, L. Hernquist, R. Weinberger, and S. Genel, "First results from the IllustrisTNG simulations: a tale of two elements - chemical evolution of magnesium and europium," *MNRAS*, vol. 477, pp. 1206–1224, June 2018. https://doi.org/10.1093/mnras/sty618

2008 *A. M. Ghez, S. Salim, N. N. Weinberg, J. R. Lu, T. Do, J. K. Dunn, K. Matthews, M. R. Morris, S. Yelda, E. E. Becklin, T. Kremenek, M. Milosavljevic, and **J. P. Naiman**, "Measuring Distance and Properties of the Milky Way's Central Supermassive Black Hole with Stellar Orbits," *ApJ*, vol. 689, pp. 1044–1062, Dec. 2008. https://doi.org/10.1086/592738 (Nobel Prize in Physics 2020)

G. Creative Works

2019 "Birth of Planet Earth", Spitz Media, Narrated by Richard Dormer, https://www.spitzcreativemedia.com/shows/birth-of-planet-earth/

H. Patents
None.

I. Bulletins, Reports, or Conference Proceedings (*in print or accepted*)

2023 †K. M. Borkiewicz, S. Levy, J. Carpenter, E. Jensen, B. Thompson, , E. Joteva, **J. P. Naiman**, M. V. Moer, A. Ghez, M. Hosek, A. K. Gautam, and K. K. O'Neil, "A Journey to the Center of the Milky Way: Stellar Orbits around Its Central Black Hole," in *The International Conference for High Performance Computing, Networking, Storage, and Analysis*, The International Conference for High Performance Computing, Networking, Storage, and Analysis, Nov. 2023. https://sc23.supercomputing.org/proceedings/sci_viz/sci_viz_pages/svs104.html

2023 +**J. P. Naiman**, "Generalizability in Document Layout Analysis for Scientific Article Figure & Caption Extraction," *arXiv e-prints*, p. arXiv:2301.10781, Jan. 2023. https://arxiv.org/abs/2301.10781

2022 E. A. Jensen, K. M. Borkiewicz, **J. P. Naiman**, and J. D. Carptenter, "Evidence-based science communication: through cinematic scientific visualization," in *ACM SIGGRAPH 2022 Courses*, pp. 1–120, 2022. https://dl.acm.org/doi/abs/10.1145/3532720.3535657

2018 †A. Perez, C.-L. Hung, **J. P. Naiman**, J. Moreno, and P. Hopkins, "Star Formation in Merging Galaxies Using FIRE," in *American Astronomical Society Meeting Abstracts #231*, vol. 231 of *American Astronomical Society Meeting Abstracts*, p. 149.54, Jan. 2018. https://ui.adsabs.harvard.edu/abs/2018AAS...23114954P

2017 †A. Perez, J. Moreno, **J. P. Naiman**, E. Ramirez-Ruiz, and P. F. Hopkins, "Star Clusters within FIRE," in *American Astronomical Society Meeting Abstracts #229*, vol. 229 of *American Astronomical Society Meeting Abstracts*, p. 343.23, Jan. 2017. https://ui.adsabs.harvard.edu/abs/2017AAS...22934323P

2014 †M. Soares-Furtado, **J. P. Naiman**, and E. Ramirez-Ruiz, "Modeling Gas Evacuation Mechanisms in Globular Clusters," in *American Astronomical Society Meeting Abstracts #223*, vol. 223 of *American Astronomical Society Meeting Abstracts*, p. 442.45, Jan. 2014. https://ui.adsabs.harvard.edu/abs/2014AAS...22344245S

J. Abstracts (*in print or accepted*)
None.

K. Book Reviews (*in print or accepted*)
None.

L. Refereed Conference Papers and Presentations

2023 *T. Dung Nguyen, Y.-S. Ting, I. Ciucă, C. O'Neill, Z.-C. Sun, M. Jabłońska, S. Kruk, E. Perkowski, J. Miller, J. Li, J. Peek, K. Iyer, T. Różański, P. Khetarpal, S. Zaman, D. Brodrick, S. J. Rodríguez Méndez, T. Bui, A. Goodman, A. Accomazzi, **J. Naiman**, J. Cranney, K. Schawinski, and UniverseTBD, "AstroLLaMA: Towards Specialized Foundation Models in Astronomy," *arXiv e-prints*,

p. arXiv:2309.06126, Sept. 2023. https://doi.org/10.48550/arXiv.2309.06126

2023 *__J. P. Naiman__, †M. G. Cosillo, P. K. Williams, and A. Goodman, "Large synthetic data from the arχiv for ocr post correction of historic scientific articles," in *International Conference on Theory and Practice of Digital Libraries*, pp. 265–274, Springer, 2023. https://doi.org/10.1007/978-3-031-43849-3_23

2022 *__J. P. Naiman__, P. K. Williams, and A. Goodman, "Figure and figure caption extraction for mixed raster and vector pdfs: Digitization of astronomical literature with ocr features," in *Linking Theory and Practice of Digital Libraries: 26th International Conference on Theory and Practice of Digital Libraries, TPDL 2022, Padua, Italy, September 20–23, 2022, Proceedings*, pp. 52–67, Springer, 2022. https://doi.org/10.1007/978-3-031-16802-4_5

2021 *†K. Borkiewicz, †V. Shah, __J. P. Naiman__, †Chuanyue Shen, S. Levy, and J. Carpenter, "Cloudfindr: A deep learning cloud artifact masker for satellite dem data," in *2021 IEEE Visualization Conference (VIS)*, pp. 1–5, 2021. https://doi.org/10.1109/VIS49827.2021.9623327

M. Other

2023 Models and Datasets released in collaboration with the UniverseTBD group, https://huggingface.co/universeTBD

2023 OCR Post Correction Dataset release, V1, https://zenodo.org/records/8006584

2022 *†K. Borkiewicz, E. Jensen, S. Levy, and __J. P. Naiman__, "Introducing cinematic scientific visualization: a new frontier in science communication," *Impact of Social Sciences Blog*, 2022. https://eprints.lse.ac.uk/114739/

2017-2023 Co-Lead Developer, ytini, an open-source visualization tool with over 10,000 users in the visual effects community, http://ytini.com/

2012-2018 Lead Developer, AstroBlend, an open-source visualization tool used in several workshops, http://www.astroblend.com/

III. Contributions to Teaching and Learning

A. Summary of Teaching Activity

I have taught four separate graduate-level courses throughout my time as an adjunct and as a Teaching Assistant Professor at the iSchool: IS 430 (Foundations of Information Processing, originally IS 452); IS 457 (Data Storytelling); IS 507 (Data, Statistical Models, and Information, originally IS 542); IS 445 (Data Visualization, originally IS 590).

Sections SP23 and FA23 of IS 457 have been co-taught with an iSchool PhD student, with SP23 being the first time the student had taught a college-level class.

Additionally, I have supervised a total of six students across four semesters of independent study including an undergraduate Informatics section (INFO 399), undergraduate Information Sciences sections (IS 389), and graduate Information Sciences sections (IS 589 and IS 592).

1. Descriptive Data

Classes taught as a Teaching Assistant Professor:

Term	Offering Dept	Course---		Section-		Indiv Instr /Class	IUs	Students	Class Contact Hours	# of Instructors
FA23	1-992	IS	389	IND	JPN	I	2	1	0	1
FA23	1-992	IS	457	LCD	ACG	C	110.4	29.6	2	2
FA23	1-992	IS	445	LCD	BCG	C	265	80	3	1
SP23	1-992	IS	457	ONL	OAG	C	137.6	39.2	1	2
SP23	1-992	IS	445	ONL	OAG	C	187	53	2	1
FA22	1-992	IS	445	ONL	OAG	C	304	80	2	1
FA22	1-992	IS	445	LCD	BCG	C	108	29	3	1
SP22	1-468	INFO	399	IND	JN	I	3	1	0	1
SP22	1-992	IS	389	IND	JPN	I	6	2	0	1
SP22	1-992	IS	445	LCD	ACG	C	250	65	3	1
SP22	1-992	IS	457	ONL	OAG	C	59	16	1	2
FA21	1-992	IS	589	IND	JPN	I	4	1	0	1
FA21	1-992	IS	445	ONL	AOG	C	176	49	2	1
FA21	1-992	IS	457	ONL	AOG	C	63	17	1	2
SP21	1-992	IS	445	ONL	AOG	C	132	35	3	1
SP21	1-992	IS	507	ONL	AO	C	100	25	3	1
FA20	1-992	IS	507	ONL	AO	C	60	15	2	1
FA20	1-992	IS	445	ONL	AOG	C	136	34	2	1

Classes taught as an Adjunct:

Term	Offering Dept	Course---		Section-		Indiv Instr /Class	IUs	Students	Class Contact Hours	# of Instructors
SP20	1-992	IS	590	LCD	DV	C	152	37	3	1
SP20	1-992	IS	542	ONL	AO	C	20	5	2	1
FA19	1-992	IS	592	IND	JPN	I	4	1	0	1
FA19	1-992	IS	542	ONL	AO	C	52	13	2	1
FA19	1-992	IS	452	ONL	AO2	C	60	19	2	2
SP19	1-992	IS	542	LCD	A	C	52	13	3	1
SP19	1-992	IS	590	ONL	DVO	C	64.5	17	2	1
FA18	1-992	IS	542	ONL	AO	C	60	15	2	1

2. Supervision of Graduate Students

Doctoral Student Research Supervision

- Elizabeth Conklin, 2023-present, current Neuroscience PhD advisee
- Daniel Evans, 2023-present, current Information Sciences PhD advisee

Master's Student Research Supervision

- A. J. Christensen, M.S. Education, 2020-2023, current research collaborator
- Hanyu (Zella) Zhao, BS/IS Student undergraduate research intern 2022-2023, M.S. Electrical and Computer Engineering (Data Science & Machine Learning concentration) at Duke University, 2023, current research collaborator
- Ishita Ghosh, M.S. Information Sciences and Academic Hourly, 2020-2023, 1 semester of independent study (Grant 20-ADAP20-0225)
- Shantanu Pagare, M.S. Information Sciences, 2022-2023, 1 semester of independent study (Grant 20-ADAP20-0225)

- Ayesha Kesharia, M.S. Information Sciences, 2022-2023, 1 semester of independent study (Grant 20-ADAP20-0225)
- Kalina Borkiewicz, MCS Computer Sciences, 2019-2022, current research collaborator and PhD student (The University of Utah in Computer Graphics and Data Visualization)
- Gayatri Kallakuri Venkata Ratna, M.S. Information Sciences, 2022, summer as Academic Hourly (Grant 20-ADAP20-0225)
- Dykee Gorell, M.S. in Library and Information Science, 2019-2020, 1 semester of independent study, and current PhD student at University of Washington

3. Supervision of Undergraduate Students

   Students supervised while a Teaching Assistant Professor at the iSchool:

   - Mridula (Mally) Shan, B.S. Human Developmental & Regenerative Biology | Statistics - Computational Biology & Bioinformatics Track, Harvard, 2023 (Grant 20-ADAP20-0225)
   - Sri Nithya Yeragorla, B.S. Information Sciences, 2022-2023, through the Students Pushing INnovation (SPIN) at the National Center for Supercomputing Applications (NCSA)
   - Dorothy Wongkarnta, B.S. Information Sciences, 2023, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Dirgh Shah, B.S. Engineering Physics/Applied Physics, 2023, through SPIN at NCSA (Grant NIH UEI H6N1ZF5HJ2G3)
   - Kiara Balleza, B.S. Geography/ Geographic Information Systems & INFO Minor, 2022-2023, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Linh Pham, B.S. Information Sciences, 2022-2023, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Morgan G. Cosillo, B.S. Information Sciences, 2021-2023, through SPIN at NCSA (Grant 20-ADAP20-0225), resulted in a co-author'd paper in a peer-reviewed conference presentation; Fiddler Innovation Fellow (NCSA), Outstanding Undergraduate Award (iSchool)
   - Junting (David) Zhu, B.S. Information Sciences & BFA Graphic Design, 2021-2023, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Rushdan Jimoh, B.S. Information Sciences, 2022-2023, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Ayesha Baweja, B.S. Information Sciences, 2022, through SPIN at NCSA (Grant 20-ADAP20-0225)
   - Yiwen Miao, B.S. Accounting and Finance, 2022, through SPIN at NCSA (Brinson Fellowship)
   - Anushka Gami, B.S. Information Sciences, 2021-2022, through SPIN at NCSA
   - Alistair Nunn, B.S. Information Sciences, 2021-2022, through SPIN at NCSA; Fiddler Innovation Fellow (NCSA), Outstanding Undergraduate Award (iSchool)
   - Shriya Srikanth, B.S. Information Sciences, 2021-2022, through SPIN at NCSA
   - Yilin (Toby) Tao, B.S. Information Sciences, 2021-2022, through SPIN at NCSA (Grant 20-ADAP20-0225), current Masters student at Duke University

   Before my current position at the iSchool, as a graduate student and postdoctoral fellow and adjunct, I mentored approximately 15 undergraduate students, many of whom where accepted to many prestigious graduate programs (e.g., Harvard, Princeton, CalTech, Columbia) and received many prestigious graduate fellowships (NSF GRFP, Ford Foundation, NASA Hubble Fellowship).

4. Other Contributions to Teaching and Learning

Curriculum Development: iSchool Courses

2022-2023 IS 345: Programming for Data Visualization

- re-submitted to BSIS committee after receiving feedback
- instruction planned for Fall 2024

2022 IS 357: Introduction to Data Storytelling

- co-developed summer of 2022 with Prof. McDowell
- taught by Prof. McDowell and graduate students in 2022-2023 academic year

2020-2023 IS 445: Data Visualization

- redesigned several assignments and several elements of webpage layout (2020-2022)
- creation of a "portfolio" final data visualization project and its online-hosting with a "online resume" GitHub page for each student (2022-2023)
- a complete redesign of assessments to being hosted on PrairieLearn (2023)
  - randomly generated datasets and prompts homeworks
  - auto-graded "Lab" coding assignments in which students received immediate feedback on progress in order to practice important programming and data analysis fundamentals
  - several assignment "auto-checks" to check submissions in order to minimize common student mistakes before final grades are assigned
- increased enrollment from ≈45-55 seats to ≈85-110 seats (2019-2023)

2021-2023 IS 457: Data Storytelling (co-development with Prof. McDowell, Prof. Comstock and PhD Student Andy Zalot)

- Restructuring of major course assignments and creation of detailed rubrics
- Creation of ≈20 in-class activities to increase class engagement (with detailed rubrics)
- Creation of ≈20 reading quizzes (now hosted on PrairieLearn) to scaffold students with reading assignments

2019-2021 IS 507: Data, Statistical Models, and Information

- Restructuring of major assignments to scaffold a final "portfolio" data analysis project
- Creation of slide decks, example questions and in class activities to increase engagement in online courses
- Creation of extensive lecture notes and prep-notebooks for coding exercises
- Hosting of all course materials online on GitHub for easy access by students

Curriculum Development: Other Courses

2019-2022 CSCI-P-14110: Introduction to Programming, Computational Science, and Data Visualization (Harvard Pre-College Program)

- Basic computation with Python, basic data cleaning and processing
- 30 hour course equivalent

2016-2017 Introduction to Computational Astrophysics and Data Visualization (Harvard - Banneker & Aztlán Institutes (REU))

- Basic astrophysics simulations with Python, basic data cleaning and processing
- 12 hour course equivalent

2014 Python Programming Bootcamp for Transfer Students (UCSC - *LAMAT* Undergraduate Summer Program (REU))

- Inquiry based program for introductory Python projects, including Raspberry PI's, scientific simulations, and three dimensional data visualization
- 28 hour course equivalent

Continuing Education Workshops

2012-2017 Sew Your Own Circuit Workshop (GeekGirlCon, Seattle WA)

- Designed course slides, activity material guide, and lead purchasing and assembly of activity packets
- 1.5 hour, inquiry based activity to introduce girls and women to electronic circuits with sewable LEDs and conductive thread

2013 Programming Fundamentals Workshop (UCSC - Institute for Scientist & Engineer Educators)

- 3 day workshop for community college transfer students
- Inquiry based Python instruction

2011 Visualizing Astronomy Workshop (UCSC - Institute for Scientist & Engineer Educators)

- 2.5 day, inquiry based teaching for mixed class of science and art undergraduates
- interdisciplinary groups used Arduinos to produce hands-on scientific art installations through a process of data acquisition, analysis, and data visualization

Other Teaching

2016 Instructor, yt user's meeting (NCSA, UIUC)

2010-2013 Instructor, Santa Cruz Jail Inmate Education project (UCSC)

2012 Guest lecturer, DANM 133 Electronics Class (UCSC)

2012 Co-instructor, Astronomy 202, Graduate level, quarter-long "Radiative Processes" (UCSC)

2011 Co-instructor, Light and Spectra workshop at Girls Go Tech Fair (NASA AMES, Mountain View, CA)

IV. Service

A. Summary of Service

1. Public Engagement

2022 Data Science Users Group presentation (April 1, 2022)

2020 GitHub Pages for Your Professional Webpage (Discovery Partners Institute)

- 2-hour introduction to GitHub pages to build your own website
- Online workshop for TechReady Illinois program

2019 Data Harvesting: Homegrown Data Analysis for Agriculture (UIUC - Continuing Education (Small Farmers & CCAs))

- Designed the course material's webpage and co-designed the course materials (slides, programming materials)
- Two, two-day workshops geared to Midwest small farmers, agronomists and CCAs
- Crop analysis and planting planning in the R programming language
- Full workshop materials accepted to Carpentries Incubator

2. Service to Disciplinary and Professional Societies or Associations

2023 Session Chair, "Monitoring and Publishing science", Theory and Practice in Digital Libraries Conference (September 2023)

2022 Referee, "Computer Vision and Machine Learning Approaches for Metadata Enrichment to Improve Searchability of Historical Newspaper Collections", Journal of Documentation (August 2022)

2021 NASA Astrophysics Data Analysis Program, Grant Panel reviewer (August 2021)

3. University and/or Campus Service

2023 AI Curriculum Committee

2022-2023 BSIS Program Committee Member

2022 Chair of Data Science Task Force

2022 NCSA faculty fellows review committee

2022 NCSA Fiddler review committee

2020-2022 MSIM Program Committee Member

2021-2022 Specialized Faculty Search Committee - School of Information Sciences (posting: 154451)

2021-2022 Capricious Grading Committee

2020-2021 Committee member, Assistant Director for MS/IM and MS/BIO Advising (posting: 141456)

4. Other Service

I am the Chair of a currently forming "Specialized Faculty Task Force" to help the growing number of faculty on this track navigate pressing issues and questions specific to those on this track.