

# TEACHING STATEMENT

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I am passionate about teaching and mentoring, which have been deeply rewarding over the past six years. Through assisting in teaching, lecturing, and mentoring research, I have had the opportunity to foster a diverse body of learners' growth. I view this work as a privilege and responsibility: to share my knowledge, skills, and passions in ways that inspire students—especially those from underrepresented and marginalized groups—deepen their understanding of the world, and equip them to address societal challenges.

## TEACHING & LECTURING

► **Experience** I assisted in teaching core computer science courses (e.g., Design and Analysis of Algorithms) at both **undergraduate and graduate levels for two years**. In this role, I taught review sessions, held office hours, designed assignments, and fairly evaluated students' solutions and provided detailed feedback. My office hours were in high demand, as these courses typically enroll **100+** students per TA. I collected questions from students in advance. This allowed me to transform my office hours into structured mini-classes with tailored teaching agendas and supplementary materials, while also dedicating time to supporting students' professional and personal growth beyond course content. By proactively organizing and optimizing these sessions, I was able to enhance efficiency, facilitate focused discussions, and ensure that each student received the assistance they needed.

Moreover, I have shared my research on advancing **AI and data science for social impact** through **17 invited talks, conferences, and workshops**. They include two rising stars workshops, one workshop for women in web data science, and two well-attended **tutorials at KDD and WSDM**, featured in *Datanami* and *Psychology Today*. These tutorials, based on an *ACM Computing Surveys* paper I led [1], aim to foster interdisciplinary mis/disinformation research. I spearheaded the proposals [2,3], the development of the [website](#), and the creation of slides. I also independently delivered lectures on data mining, machine learning, and NLP, demonstrating their application in detecting mis/disinformation through content and social context, especially integrating theoretical insights in social sciences. My talks have reached and been tailored to diverse audiences spanning AI, data science, computer science, information science, and social sciences. The one on the *Data Exchange* podcast has been viewed 4,600+ times.

► **Philosophy** My experience informs my teaching philosophy centered around three principles.

- 1. Bridging past, present, and future with timeless insights.** Given the rapid evolution of technologies, I am often asked, "How can studying methods from decades ago be useful today?" and "How can current work remain significant amid AI's pace?" In response, I highlight the enduring relevance of fundamental concepts, invite exploration of synergies between traditional and modern approaches, and demonstrate how past findings have inspired my research. I plan to integrate these perspectives into my courses to motivate students, cultivate an appreciation for historical knowledge, and connect them with cutting-edge advancements. This approach will provide students with a comprehensive understanding of interconnected concepts, methods, and applications, fostering systematic learning. Moreover, I aspire to equip them with the distilled mindsets essential for innovation and problem-solving.
- 2. Building engaging, inclusive, and equitable classrooms.** Students bring diverse strengths, backgrounds, interests, goals, and personalities to the classroom. I believe in thoughtfully adaptive teaching, dedicated to fostering an engaging, inclusive, and equitable learning environment that values and respects diverse contributions. As a TA, I designed original problems of varying difficulty to challenge highly motivated students with extra credit opportunities while supporting reasonably diligent students in building essential skills to achieve satisfactory grades. Recognizing that some students—such as introverts or non-native speakers—may find participation challenging, I plan to offer participation credits through various ways, including verbal discussions in groups or class, written responses, and online

forums. I will also encourage students to pursue projects that integrate course knowledge with their unique experiences. To ensure the course remains relevant and effective, I will use surveys and anonymous feedback to make timely adjustments. For example, I will tailor examples to students' interests and backgrounds to help explain complex concepts, and invite guest speakers aligned with their aspirations.

**3. Critically embracing AI.** Generative AI tools like ChatGPT are a double-edged sword. They facilitate information seeking, provide timely feedback, and inspire diverse thinking [4]. However, their outputs can contain inaccuracies, biases, and may raise ethical concerns [5,6]. Overdependence on such tools risks undermining critical thinking and genuine learning. While outright bans pose challenges due to the difficulty of AI detection, thoughtful integration is essential. In my classroom, I strive for transparency by encouraging students and myself to openly disclose our use of AI. We will explore its benefits and limitations through curated readings and discussions, critically engaging with it to foster analytical skills and intellectual independence [4,6]. My assessments will prioritize the thinking process, rewarding originality and sound reasoning. Furthermore, I will implement strategies such as in-class presentations to discourage passive acceptance of AI-generated solutions.

► **Plans** I am interested in teaching courses on AI, data mining, machine learning, NLP, data science, social computing, and computational social science, which relate to my background. I am particularly excited about leveraging my expertise to develop and teach courses on special topics such as AI and data science for social impact, retrieval-augmented generation, trustworthy AI, and multimodal AI. I am open to teaching undergraduate and graduate students, independently or collaboratively with other faculty members. I am enthusiastic about teaching in various formats, including lecture-, project-, and discussion-based courses.

## MENTORING

Mentoring has been a cornerstone of my academic journey and a deeply fulfilling experience. I have **independently guided 18 students'** research on AI and data science for social impact. They include one high school student, eight undergraduates, eight master's students, and one PhD student [7] in **diverse disciplines** (e.g., computer science, data science, sociology, mathematics, computer engineering). Among them, nine (50%) **are women**, and one participated through the [Louis Stokes Alliances for Minority Participation](#) program. Most began with no prior research experience; yet, **five submitted or published their first papers** in venues such as CIKM and PAKDD [8,9,10,11,12]. Furthermore, four have pursued PhD studies at Cornell, SUNY Buffalo, William & Mary, and NCSU; five have entered master's programs at Stanford, UW, and USC; and four have secured positions in companies like Google and Amazon.

I embrace diversity in all its forms and prioritize self-motivation in students. For example, I had the privilege of mentoring Shawn Collinge, a former crane operator who transitioned to undergraduate studies at UW. Despite his non-traditional background, Shawn stood out for his clear goals, intellectual curiosity, strong execution, and sincerity. His efforts have been instrumental in helping us secure a grant. I hold regular meetings with each student to review progress, address concerns (whether related to research or beyond), and plan for the week ahead. I also provide timely asynchronous feedback as needed. My mentorship approach encourages active problem-solving, emphasizing critically proposing and evaluating potential solutions. Understanding each student's expectations and designing tailored mentoring plans have been central to my philosophy. For research beginners, I often introduce highly feasible ideas with clear, actionable steps. Meanwhile, I inspire them to explore broadly and think deeply at every stage, fostering their confidence and skills to achieve high-quality scientific outcomes.

Looking ahead, I am dedicated to fostering equitable, inclusive, and engaging learning environments that nurture the professional and personal development of diverse students. As a first-generation college graduate, I deeply value education as a right, not a privilege. Grateful for the support that fueled my growth, I have shared my lectures and materials online, am developing data science curricula for middle and high school students, and remain committed to promoting broader access to education as a way to give back.

**REFERENCES**

- [1] Xinyi Zhou and Reza Zafarani. A survey of fake news: Fundamental theories, detection methods, and opportunities. In: *ACM Computing Surveys (CSUR)* 53.5 (2020), pp. 1–40.
- [2] Xinyi Zhou, Reza Zafarani, Kai Shu, and Huan Liu. Fake news: Fundamental theories, detection strategies and challenges. In: *Proceedings of the 12th ACM International Conference on Web Search and Data Mining (WSDM)*. 2019, pp. 836–837.
- [3] Reza Zafarani, Xinyi Zhou, Kai Shu, and Huan Liu. Fake news research: Theories, detection strategies, and open problems. In: *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*. 2019, pp. 3207–3208.
- [4] Andy Extance. ChatGPT has entered the classroom: how LLMs could transform education. In: *Nature* 623.7987 (2023), pp. 474–477.
- [5] Xinyi Zhou, Ashish Sharma, Amy X Zhang, and Tim Althoff. Correcting misinformation on social media with a large language model. In: *arXiv preprint arXiv:2403.11169 (in revision at Nature Communications)* (2024).
- [6] Editorial. Why teachers should explore ChatGPT’s potential—despite the risks. In: *Nature* 623 (2023), pp. 457–458.
- [7] Ruotong Wang, Xinyi Zhou, Lin Qiu, Joseph Chee Chang, Jonathan Bragg, and Amy X Zhang. Social-RAG: Retrieving from Group Interactions to Socially Ground AI Generation. In: *arXiv preprint arXiv:2411.02353 (under review at CHI 2025)* (2024).
- [8] Chen Yang, Xinyi Zhou, and Reza Zafarani. CHECKED: Chinese COVID-19 fake news dataset. In: *Social Network Analysis and Mining* 11.1 (2021), p. 58.
- [9] Xinyi Zhou\*, Jindi Wu\*, and Reza Zafarani. SAFE: Similarity-aware Multimodal Fake News Detection. In: *Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*. Springer. 2020, pp. 354–367.
- [10] Xinyi Zhou\*, Jiayu Li\*, Qinzhou Li, and Reza Zafarani. Linguistic-style-aware neural networks for fake news detection. In: *arXiv preprint arXiv:2301.02792* (2023).
- [11] Xinyi Zhou, Apurva Mulay, Emilio Ferrara, and Reza Zafarani. ReCOVeRY: A Multimodal Repository for COVID-19 News Credibility Research. In: *Proceedings of the 29th ACM International Conference on Information & Knowledge Management (CIKM)*. 2020, pp. 3205–3212.
- [12] Xinyi Zhou, Atishay Jain, Vir V Phoha, and Reza Zafarani. Fake news early detection: A theory-driven model. In: *Digital Threats: Research and Practice* 1.2 (2020), pp. 1–25.