Undergraduate Research Opportunities
School of Computing & Information
Spring 2024

Dr. Dmitriy Babichenko, Department of Informatics & Networked Systems
Contact: dmb72@pitt.edu, https://www.sci.pitt.edu/people/dmitriy-babichenko

Keywords: learning technologies, games, augmented reality, virtual reality, cultural preservation

Research: Developing VR environments for cultural preservation, games (game-based learning) tools for education, human-computer interaction/usability studies related to a wide variety of user interfaces.

Requirements: Programming requirements: Python, Unity3D / C#. Experience with interviewing people. Research study design. There are no course-based prerequisites and even the skills that are listed can be learned on the job by highly motivated students.

Positions: for pay, for credit, volunteer

Looking for: Freshmen, Sophomores, Juniors, Seniors

If interested: Reach out to Dmitriy Babichenko (dmb72@pitt.edu).

Dr. Na Du, Department of Informatics & Networked Systems, HAT Lab
Contact: na.du@pitt.edu, https://nadu-pitt.github.io/

Keywords: human factors in smart cities, human behavior modeling, human-centered design, automated vehicles, privacy and cybersecurity

Research: Projects are always available for students with backgrounds or interests in any of the following areas: human factors/human-computer interaction, intelligent transportation systems, applied data science and machine learning, or UX research/design.

Requirements: Strong and self-motivated candidates with ANY of the following qualifications would be particularly encouraged to apply: (1) prior experience in studying human factors/human-computer interaction; (2) knowledge in applied data science and machine learning; (3) skills in programming and developing AR/VR/simulator applications; (4) interdisciplinary research backgrounds (design, engineering, psychology, etc.).

Positions: for pay, for credit, volunteer

Looking for: Juniors, Seniors

If interested: If you are interested in working with me, feel free to contact me via email with the title ‘Prospective Undergraduate Student at Pitt’ and include the following information: (1) your CV; (2) a copy of your transcripts; (3) a brief description of your background and research interests. I will reach out if there is a potential fit and we can then set up a meeting for discussion.

Dr. Rosta Farzan, Department of Informatics & Networked Systems, Sustainable Social Computing Lab
Contact: rfarzan@pitt.edu, https://ssc-pitt.github.io/

Keywords: social computing, human computer interaction, data literacy, user experience design
**Research:** Quantitative or qualitative data analysis, software development, conducting user studies and usability studies, working with community members

**Requirements:** Interest in social justice issues; previous experience in either one of these: programming, working with quantitative or qualitative data, engagement in working with high school or middle school students, design of web-based applications, conducting interviews

**Positions:** for pay, for credit, volunteer

**Looking for:** Sophomores, Juniors, Seniors

If interested: Send an email to me, set up a meeting to discuss interests and goals, attend a lab meeting to get familiar with the lab and the existing projects. Most likely they will be then matched to work with one of my PhD students on a project.

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**Dr. Aakash Gautam, Dept. of Computer Science/Dept. of Information Culture & Data Stewardship**

**Contact:** aakash@pitt.edu, https://aakash.xyz/

**Keywords:** human-computer interaction, community-based design, empowerment, human-centered

**Research:** Help in building resources for a digital literacy tool aimed at supporting formerly incarcerated individuals. Contribute to the development of a React-based web application to be deployed at a non-profit organization.

**Requirements:** None listed

**Positions:** for credit, volunteer

**Looking for:** Sophomores, Juniors, Seniors

If interested: Reach out to me (aakash@pitt.edu). Mention your interest clearly in the email and suggest a few time slots when you can meet with me over Zoom.

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**Dr. Yu-Ru Lin, Department of Informatics & Networked Systems, PICSO Lab**

**Contact:** yurulin@pitt.edu, https://picsolab.github.io/

**Keywords:** computational social science, social networks & social media, cyber-social influence, ethical and accountable AI, digital accountability

**Research:** The research project is interdisciplinary and requires students with different skill sets. Students with strong communication skills but little programming experience can contribute to research on social media narrative or discourse analysis, which help ensure the safety and accountability of digital communication systems. Students with programming experience in frontend or backend tools can help develop ethical and accountable AI systems, helping to shape the future of AI.

**Requirements:** The research project requires students with diverse skill sets since it is interdisciplinary. There are two roles available for students to assist with:

1. Analyzing social media content and information spreading: We are seeking students who possess advanced English proficiency, capable of articulate and nuanced communication, both orally and in writing. Interest in social justice issues and experience with social media platforms are desirable. Programming expertise is not a prerequisite for this role. However, students with an interest or experience in narrative or discourse analysis, cultural identity, and group conflicts will be given preferential consideration.

2. Building ethical and accountable AI systems: For this role, students with programming experience in frontend tools (e.g., React/JavaScript, d3) or backend tools (e.g., Django/Flask), as well as familiarity with data pre-processing and data mining packages, and data scraping tools to interact with RESTful APIs are preferred.
Positions: for pay, for credit, volunteer

Looking for: Juniors, Seniors

If interested: Please fill out the following application form and we will contact you if there is a fit.

Dr. Diane Litman, Department of Computer Science

Contact: dlitman@pitt.edu, https://people.cs.pitt.edu/~litman/

Keywords: artificial intelligence for education, AI, natural language processing

Research: Leverage and advance natural language processing (NLP) software to support development of educational technologies such as an automated writing evaluation system.

Requirements: Must have taken or be currently enrolled in a class in natural language processing or machine learning, and/or have equivalent expertise and programming skills.

Positions: for pay

Looking for: Sophomores, Juniors, Seniors

If interested: Please apply online here.

Dr. Ryan Shi, Department of Computer Science

Contact: ryanshi@pitt.edu, https://ryanzshi.github.io/

Keywords: AI for social good, machine learning, language models, multi-agent system, sequential decision making

Research: Our lab collaborates with multiple external stakeholders to develop AI algorithms to address societal challenges in food security, environmental conservation, healthcare, and poverty reduction. We plan to recruit 5-10 undergraduate students to carry out a wide range of research projects. Many of the projects are well-defined in scope, but we also welcome more exploratory projects if the interests align. The technical tools used in our lab include large language models, multi-agent system, deep learning, multi-armed bandit, and reinforcement learning. Knowledge in at least one of these topics is useful.

Requirements: A keen interest in working on AI problems to address societal challenges. A first course in AI/ML. Mathematical maturity. Proficient in programming. Willingness to work with external (non-tech) stakeholders to understand their needs and deploy AI algorithms.

Positions: for credit, volunteer

Looking for: Sophomores, Juniors, Seniors

If interested: Please email Prof. Ryan Shi at ryanshi@pitt.edu with (1) a resume, (2) an introduction of your academic background, and (3) your research topics of interest. If there is a match, you will be contacted about the next steps.

Dr. Angela Stewart, Dept. of Informatics & Networked Systems

Contact: angelas@pitt.edu, www.angelaebstewart.com

Keywords: equity in STEM education, HCI, social computing, social robots

Research: I have a variety of positions open for undergraduates, including creation of computing education and AI curricula, design of dialogue for social robots, qualitative and quantitative data analysis, data cleaning and processing. Precisely what you work on will be decided in a collaborative conversation between us.

Requirements: I am open to students with a variety of skills and backgrounds. My only requirement is time to participate (at least 10 hours/week), and interest in my research projects.
**Positions:** for pay, for credit

**Looking for:** Freshmen, Sophomores, Juniors, Seniors

**If interested:** Email me with a description of what you are interested in as it relates to my work.

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**Dr. Erin Walker, Department of Computer Science, FACETLab**

**Contact:** eawalker@pitt.edu, https://www.facetlab.pitt.edu/

**Keywords:** educational technology, artificial intelligence, social robotics, collaborative learning, culturally-responsive design

**Research:** Many students in my lab do web development, UX design, design of AI models, machine learning, and educational data mining. Students can also design and run studies, do qualitative or quantitative data analysis, and do curriculum design.

**Requirements:** Just an interest in intelligent educational technologies or human-computer interaction. We meet students where they are.

**Positions:** for pay

**Looking for:** Freshmen, Sophomores, Juniors, Seniors

**If interested:** Feel free to send me an email describing your interest in research and attach your resume. I will then reach out to you to let you know if there is current availability in the lab and to schedule a meeting to discuss further.

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**Dr. Shandong Wu, Department of Radiology, Center for Artificial Intelligence Innovation in Medical Imaging**

**Contact:** wus3@upmc.edu, https://www.aimi.pitt.edu/people/leadership

**Keywords:** medical imaging, radiology, machine learning, artificial intelligence, computer vision, translational research

**Research:** Students with strong machine/deep learning and/or computer vision backgrounds and interested to study how these computational techniques can be developed and implemented for medical imaging (radiological)-based applications (risk assessment, screening, diagnosis, prognosis, treatment evaluation, etc.).

**Requirements:** Coding for machine/deep learning, Experience with medical imaging data preferred but not required. Computer vision experience will be a plus.

**Positions:** volunteer

**Looking for:** Sophomores, Juniors, Seniors

**If interested:** Send a copy of your CV to wus3@upmc.edu. Also include a statement in your email about: (1) how many hours you can work per week; (2) your motivation for doing research; (3) your specific experiences/courses in computer vision, medical (imaging) data, machine learning, if any.