University of Pittsburgh | Informatics and Networked Systems
School of Computing and Information

You are receiving this email because you are enrolled in the MSIS/MST graduate degree programs within the Department of Informatics and Networked Systems at the School of Computing and Information. Each weekly newsletter will feature important updates on career/academic and job opportunities, department and school events, enrollment guidance and upcoming academic deadlines.

Available in Person in IS Building Room 706 starting January 3, 2024, Monday through Friday 8:30am to 5pm

Curricular Practical Training (CPT) for F-1 Students in SCI

Description: International students in the School of Computing and Information Science (SCI) can join the OIS to learn how to enhance their academic experience by participating in an internship, practicum, or co-op using the work authorization, Curricular Practical Training (CPT). This session is designed specifically for SCI students on the F-1 visa. For sessions related to OPT, please check out OIS's upcoming event schedule here.

When: Tuesday, February 20, 2023 from 1:00 – 2:00 p.m., 3rd floor theater in the Info. Sciences Bldg.

Registration link: no RSVP necessary

DINS PhD Student Bradley Wheeler will present his proposal defense, at 9:30am in Room 522 of the Information Sciences Building.

Adaptive Meta-Learning for Anomaly Detection in Hyperspectral Imaging

By *Bradley J. Wheeler*

Hyperspectral images provide detailed information about reflected electromagnetic radiation that range across the ultraviolet, visible, and infrared wavelength spectrums. This information can be critical in instances where visible light spectrums alone may be insufficient in capturing the nuances that delineate different objects or events from each other in images. This has implications in domains such as agriculture, surveillance, disaster recovery, and environmental monitoring to name a few. An important step in leveraging hyperspectral data in these applications is anomaly detection. Algorithms for hyperspectral imaging anomaly detection have been a focus in research since at least 1990, leading to the generation of a substantial body of literature aimed at addressing this challenging problem. These algorithms are designed to exploit the nuanced information embedded in hyperspectral images to identify each pixel within an image as a background or anomalous pixel.

In this proposal, I address major challenges associated with a pressing dichotomy that exists within hyperspectral anomaly detection algorithms. Studies reveal an inverse relationship between strong anomaly detection performance for specific images and broad generalizability across heterogeneous sets of images among algorithms. While many algorithms exist, most originate from a few main methods, and accordingly share one of a few main biases about hyperspectral images. Consequently, different algorithms are better equipped to handle different hyperspectral images, and once an algorithm is selected for a specific problem, the information from the other algorithms is discarded. No studies appear to have systematically addressed how insights gleaned from additional biases may mitigate overgeneralizations resulting from the selected bias and how that may impact both hyperspectral anomaly detection performance and generalizability. In response to this gap, I propose Adaptive Meta-Learning for Anomaly Detection in Hyperspectral Imaging (AML-ADHI), an adaptive meta-learning algorithm designed to dynamically learn which biases best learn to model anomalous content for a given hyperspectral image. By cumulatively levering information learned from multiple biases, AML[1]ADHI can responsively adapt to image-specific features and flexibly apply biases in concert, aiming to maximize both performance and generalizability across sets of heterogeneous hyperspectral images. Furthermore, AML-ADHI quantitatively measures the extent to which it utilizes each bias, enhancing interpretability of the results and facilitating additional downstream analyses. AML-ADHI marks a significant step towards developing higher performing and more versatile solutions for anomaly detection in hyperspectral imaging.

2024 Summer Intern, Computer Vision

Samsung Research America
Mountain View, CA
(Onsite)

Role Description

Lab Summary:

Samsung Research America (SRA) plays a pivotal role in developing the next generation of discovery in software, user experience and services for future products that can enrich your life.

Our mission is to research and develop new technologies by collaborating with the best and brightest and creating a collaborative environment between industry and academia. Headquartered in Silicon Valley, with locations in many technology centers in North America, SRA is driven to build a culture of innovation that rapidly translates research and new ideas into the unexpected.

Position Summary:

In this internship, the student will participate in our current research on optical based image transformation including depth based reprojection. Particular focus will be on the interoperability of traditional computer vision techniques and Machine learning techniques.

Position Responsibilities:

- Work with existing engineers to understand current system.
- Experiment with alternative approaches to our current solution
- Create poster session from resulting work.

Required Skills:

- Currently pursing a MS or PhD in a related field
- Solid understanding of deep learning algorithms and experience with bringing machine learning technologies into research, product systems. This includes depth from image, object recognition, panoptic segmentation, etc.
- Solid foundation in computer vision; key areas of interest include camera tracking, multiple view geometry, 3D scene comprehension, camera calibration, camera transformation, etc.
- Solid foundation in software development and related tools.
- Proficiency in C, C++ programming language and at least one another prototyping language such as MATLAB or Python.
- Strong teamwork, communication skills, passion, productivity, and self-learning ability.

2024 Summer Intern, Computer Vision | Samsung Research America | Handshake (joinhandshake.com)

Full Stack Java React Developer

InterSources Inc
Mesa, AZ
(Onsite)
Job Description:

We are looking for a skilled Full Stack Java React Developer to join our team. In this role, you will be responsible for developing and maintaining web applications using Java on the backend and React on the

frontend. You will work closely with our development team to deliver high-quality software solutions that meet our clients' needs.

Responsibilities:

- Design, develop, and maintain web applications using Java, Spring Boot, and React.
- Collaborate with cross-functional teams to gather and analyze requirements, and translate them into technical specifications.
- Develop RESTful APIs and integrate them with frontend components using React.
- Implement responsive and user-friendly UI designs using modern frontend frameworks and libraries.
- Write clean, efficient, and maintainable code following best practices and coding standards.
- Conduct code reviews, testing, and debugging to ensure the quality and reliability of the software.
- Work closely with QA engineers to identify and address any defects or issues.
- Stay current with emerging technologies and industry trends, and apply them to enhance our software development process.

Qualifications:

- Bachelor's degree or higher in Computer Science, Engineering, or a related field.
- Proven experience as a Full Stack Developer, with strong proficiency in Java and React.
- Solid understanding of object-oriented programming principles and design patterns.
- Experience with backend frameworks such as Spring Boot, Hibernate, or similar.
- Proficiency in frontend technologies including HTML, CSS, JavaScript, and React.
- Familiarity with RESTful APIs and microservices architecture.
- Knowledge of database systems such as MySQL, PostgreSQL, or MongoDB.
- Experience with version control systems (e.g., Git) and CI/CD pipelines.
- Strong problem-solving and analytical skills, with the ability to troubleshoot and debug complex issues.
- Excellent communication and collaboration skills, with the ability to work effectively in a team environment.

Full Stack Java React Developer | InterSources Inc | Handshake (joinhandshake.com)

For those planning on graduating in Spring of 2024 (otherwise known as term 2244 in PeopleSoft), you must apply to graduate to get your diploma (and, of course, successfully complete all appropriate coursework)!

Here is the timeline for Term 2244:

Graduation Application Closes – 4/1/24

If you are working on a Master's or Doctoral Thesis.-Final Day for ETD Paperwork & D-Scholarship Upload – April 22, 2024- (What to Do After You Defend Your Thesis/Dissertation | Electronic Theses and Dissertations (pitt.edu))

********Please be advised, that if you have any questions, you can always reach out to me via email (jap306@pitt.edu) and phone number (412-383-4212). **********

Regards,
James Petraglia (Pa-trail-ya)