Ian Knight

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Education

- **Georgia Institute of Technology** — Atlanta, GA
  Bachelor of Science in Computer Science; GPA: 4.00 — *Aug. 2021 – Dec. 2024*

Experience

- **Neural Data Science Lab (NERDs)** — Atlanta, GA
  Research Intern — *May 2024 - Present*
  - **Visual Decoding**: Pixel-space, natural image reconstruction from visual cortex neural data by designing novel models adding pre-trained image model's biases to decoding. PI: Eva Dyer
  - **Open Source Decoding Models**: Contributing to POYO, a neural foundation model and open data framework for neural data science.
- **Exoskeleton and Prosthetic Intelligent Controls Lab (EPIC)** — Atlanta, GA
  Research Assistant — *May 2022 - Present*
  - **Robotic Leg Development**: Machine learning development for and construction of single-leg powered, robotic prosthesis controlled by a set of machine learning models. PI: Aaron Young
  - **Radar Sensing for Terrain Analysis**: Pioneered novel computer vision method with 2D/3D TI MMWave radar for incoming slope estimation used for torque control, **won PURA Award**.
- **Bio-Interfaced Translational Nanoengineering Group** — Atlanta, GA
  Research Assistant — *Jan 2023 - May 2024*
  - **Blepharospasm Diagnosis**: Built flexible, wearable patch sensor reading EMG signals from eye muscles using ML to detect apraxia of eyelid movements. PI: Woon-Hong Yeo
- **Argonne National Laboratory** — Chicago, IL
  Research Intern — *Summer 2023*
  - **Particle Accelerator Physics**: Developed a novel machine learning method to find Twiss params from pepper-pot images in particle accelerator, published **conference paper.** PI: Brahim Mustapha
- **Rystad Energy** — Houston, TX
  Software Engineer Intern — *Summer 2022*
  - **Client Dashboards**: Web application to display client-facing dashboards [Next.js, Redux, Amplify].
  - **Client Data Analytics**: Natural language processing (NLP) for sentiment analysis and web scraper to populate client databases.

Publications

- **I.J. Knight** and B. Mustapha (2024). Beam emittance and Twiss parameters from pepper-pot images using physically informed neural nets. Proceedings of the 32nd Linear Accelerator Conference (LINAC'24). Accepted. (Selected Oral Top 10%)
- Maldonado-Contreras, J. Y., Johnson, C., Zhou, J., Kim, H., **Knight, I.J.**, & Young, A. J. (2024). Real-time continual learning for speed estimation in lower-limb powered prosthesis. IEEE Trans. on Medical Robotics & Bionics. Under Review.
- Maldonado-Contreras, J., Johnson, C., **Knight, I.**, Sawant, A., Zhou, S., Kim, H., Herrin, K., & Young, A. (2024). Transfer Learning for Walking Speed Estimation Across Novel Prosthetic Devices and Populations. IEEE ICRA. Under Review.
- Azabou, M., Pan, K. X., Arora, V., **Knight, I.J.**, Dyer, E. L., & Richards, B. A. (2024). Multi-session, multi-task neural decoding from distinct cell-types and brain regions. ICLR 2025 Conference Submission. Under Review.

Projects

- **PaperBulb** : App visualizes a directed acyclic graph representing the citation lineage of a research paper with LLM context retrieval [Linux, Flask, and Node].
- **Plant Disease Detection App**: A web app to diagnose plant's health using a machine learning classifier.

Leadership

- **President GT IEEE**: Built Robotech Hackathon and managed 30,000/yr budget (2023-2024).
- **Teaching Assistant**: Office hours, grading, and test admin for PHY2212 Electromagnetism with simulation.

Programming Skills

- **Languages**: Python, Java, C++, SQL, JavaScript
- **Technologies**: AWS, React, GCE, Kubernetes
- **AI/ML**: Pytorch Lightning, TensorFlow.js, Wandb