John Patrick Capocyan

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EDUCATION

University of Texas at Austin, B.S. in Computer Science   Aug 2025 - May 2029
- **Relevant Courses:** Data Structures, Discrete Mathematics for Computer Science, Intro to Probability & Statistics
- **Member:** Texas Luminescence, UT Chess Club, Filipino Students Association

PUBLICATIONS

Enhancement Framework for Vision Transformers in Data Limited Cancer Detection: IEEE MIT
Undergraduate Research Technology Conference (URTC), 2024
- Author(s): J.P. Capocyan

**Implementation of Convolutional Neural Networks for Classifying Lung Cancer Types from
Histopathological Images:** IEEE Integrated STEM Education Conference (ISEC), 2024
- Author(s): J.P. Capocyan | Citations: 3

WORK EXPERIENCES

Validly, Founder - Austin, TX | **www.validlyapp.com**   June 2025 – Present
- Used React and Node.JS to develop Validly, an LLM pipeline consisting of Linkup, Groq, and Gemini that takes in a user's business idea and provides tailored insights to market demand trends, competitors, and MVP design.
- Prompt engineered LLM APIs to optimize text responses and research personalized info based on user profiles while storing their data and business ideas in Supabase and running SQL commands to edit project tables.
- Lead 3 developers and 1 growth intern, overseeing all technical development and advertisement, leading to 10,000+ online impressions, 100+ social media followers, and 10 early-access users from 44 waitlist sign ups.

iAnswer, Software Developer Intern - Katy, TX (Remote, Unpaid)   May 2024 – Aug 2024
- Tested React/Node.js interface components in TestFlight, reporting 15+ bugs and suggestions to the team.
- Implemented RAG to assist in fine-tuning a ChatGPT-based application on 1000+ anonymized medical records.

PROJECTS

PCSVI: A New Vision Transformer Method | Python, Tensorflow, OpenCV, Pandas   Mar 2024 - Aug 2024
- Developed a novel framework that improved data-limited cancer detection for Vision Transformers by 27%.
- Framework attained a 97.50% accuracy in multi-class cancer classification given only 1200 training images.
- Introduced the Post-Convolutional Single Vector Input (PCSVI) algorithm that compressed 3D pathology image data into single-vector representations for ViTs, reducing training time while maintaining performance.
- Authored/presented paper as one of the 35 sole authors at MIT's 2024 IEEE URTC (200+ attendees).

CNN Lung Cancer Detection | Python, Tensorflow, OpenCV, Pandas, Sklearn   Aug 2023 - Jan 2024
- Created a DenseNet201 CNN achieving 94.07% accuracy multi-class lung cancer H&E image classification (30,000+). Applied Vahadane stain normalization, while preserving tissue and improving accuracies by 8%.
- Attained a 99.81% accuracy on the LC25000 dataset (5 classes) without the need for stain normalization.
- Authored/presented paper as one of the 58 sole authors at Princeton's 2024 IEEE ISEC (150+ attendees).

HONORS AND AWARDS

Associate Member, Sigma Xi Scientific Research Honor Society (2025): Inducted for my publications' contributions to the Mathematics/CS field after review and approval from the Sigma Xi committee.
CS NHS Lecturer, "Intro to Deep Learning" (2025): Taught Clements' first Deep Learning lecture to 40+ high school students, inspired from chapters 1 and 2 of Simon J.D. Prince's "Understanding Deep Learning" book.

TECHNICAL SKILLS

Programming Languages: Python, Java, JavaScript, HTML, CSS, SQL
Frameworks & Tools: Tensorflow, PyTorch, OpenCV, Pandas, NumPy, Matplotlib, Sklearn, React
Technologies: Deep Learning, Computer Vision, Jupyter Notebook, Git, Supabase, VS Code, Cursor