Kevin Karnani

Machine Learning Researcher

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Education

Johns Hopkins University — *Baltimore, MD*

Master of Science in Artificial Intelligence — *Aug 2022 — Current*

Cumulative GPA: 0.00

Drexel University — *Philadelphia, PA*

Bachelor of Science in Computer Science & Minor in Mathematics — *Sep 2018 — Jun 2022*

Cumulative GPA: 3.94 (Summa Cum Laude)

Publications

Computational Metadata Generation Methods for Biological Specimen Image Collections (Preprint)

K. Karnani, J. Pepper, D. Breen, et al. *International Journal on Digital Libraries*, Research Square, Apr. 2022

Experience

Johns Hopkins University Applied Physics Lab — *Laurel, MD*

Machine Learning Research Assistant (Secret) — *Apr 2022 — Current*

- Conducting literature reviews in object detection architectures for drone imaging datasets to improve model metrics
- Mitigating object detection data annotation errors via confident learning to optimize navigation route generation
- Converting models from TensorFlow to PyTorch to leverage optimizations when deploying onto low spec machines
- Reviewing ongoing research on complex-valued CNNs to better utilize complex properties for SAR generated images

Drexel University — *Philadelphia, PA*

Computer Vision Research Assistant — *Jun 2021 — Apr 2022*

- Generalized metadata extraction from subsets of 5 biological specimen image repositories storing 500,000+ images
- Refined the length calculation of specimen detected by detectron2 with a 20% faster vectorized implementation
- Parallelized code and increasing concurrency by separating code into functions, yielding an 87.5% optimized runtime
- Implemented 16 new metadata properties and 4 error reduction approaches, yielding a 74% error rate decrease

Clarivate Analytics — *Philadelphia, PA*

Junior Software Engineer — *Sep 2020 — Mar 2021*

- Ported the next generation of a data citation index (Web of Science) that generates $249 million in revenue
- Migrated 4 core components of the Web of Science legacy app to the new application in an Agile environment
- Updated and created 6 features of the new Web of Science using Angular11, RxJS/RxJava, and Java microservices
- Adhered to standard CI/CD practices by writing 500+ unit/e2e test and 100+ PR reviews to obtain 93% Sonar coverage

Projects

Digital Pathology — *Drexel University*

Lead Developer & Project Manager — *Sep 2021 — Jun 2022*

- Remodeled an project using digitized nasal slides to improve classification accuracy of chronic sinusitis severity to 71%
- Determined the potential severity chronic sinusitis given high density eosinophil regions using Machine Learning
- Transitioned from single-CPU to multi-GPU usage to reduce computational complexity of image segmentation by 95%
- Containerized the project onto AWS SageMaker and S3 to automate hyperparameter tuning and increase runtime speed

Skills

Programming Python, Java, MATLAB/Octave, C, C#, Bash, Angular8+, HTML5, CSS, JavaScript, NodeJS, LaTeX

Technologies Git, Jira, TensorFlow, PyTorch, Detectron2, NumPy, Pandas, Sci-Kit Learn, AWS EC2, MongoDB

Languages Spanish, Hindi