Patrick Tinsley

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Education

University of Notre Dame   *South Bend, IN*

PhD in Computer Science and Engineering - GPA: 3.92   *June 2018 - May 2023 (expected)*

Relevant Coursework: Complexity & Algorithms, Advanced Computer Architecture, Operating Systems, Computer Vision I, Computer Vision II

Advisors: Dr. Adam Czajka, Dr. Pat Flynn

MSc in Applied and Computational Mathematics and Statistics (Predictive Analytics Specialty) - GPA: 3.88   *June 2017 - May 2018*

Relevant Coursework: Time Series Analysis, Applied Probability, Applied Linear Models, Generalized Linear Models, Data Science, Data Analysis for Physicists, Advanced Scientific Computing

BSc in Applied and Computational Mathematics and Statistics - GPA: 3.75 (Cum Laude)   *September 2013 - May 2017*

Relevant Coursework: Advanced Biostatistical Methods, Neural Networks, Computational Methods, Statistical Methods in Data Mining, Numerical Analysis, Computational Modeling for Neuroscience, Web Applications, C/C++ Programming

Professional Experience

University of Notre Dame   *South Bend, IN*

Research/Teaching Assistant   *June 2018 - Present*

- (Research - Face Recognition I) Implemented custom web app to display person re-identification results (face and body) across 12 sample CCTV surveillance videos; interactive components of the app allowed operators to (i) select or upload custom gallery videos/probe images, and (ii) manually mark false positive matches for "hard" negative samples for later re-training.
Collaborators: Dr. Pat Flynn (University of Notre Dame), Dr. Ed Delp (Purdue University)
- (Research - Face Recognition II) Designed and conducted biometric experiments with 5 state-of-the-art face recognizers to verify, cluster and identify individuals across large-scale, racially-diverse, extreme-pose data sets.
Collaborators: Dr. Ogechukwu Iloanusi (University of Nigeria), Dr. Pat Flynn (University of Notre Dame)
- (Research - Identity Leakage) Assessed the degree to which authentic "real" images seen during GAN training can match in supposedly synthesized "fake" images in two biometric modalities: face and iris recognition; 5 matchers were compared for each modality.
Collaborators: Dr. Adam Czajka (University of Notre Dame), Dr. Pat Flynn (University of Notre Dame)
- (Teaching) Adapted existing homework assignments and placement tests (Python, C++) to be automatically graded via Vocareum; manually graded visualization problems that could not be auto-graded.

Aunalytics   *South Bend, IN*

Machine Learning Intern   *June 2017 - September 2017*

- Benchmarked and predicted model training times for 150+ combinations of neural network architecture, loss function, and data set; developed linear model to estimate B2B deliverable turnaround time given model type and data size.
- Implemented and maintained internal model zoo with multiple formats of production-ready machine learning models; formats included pickle, .RDa, and .pb (TensorFlow)

Publications

First Author

- Tinsley, Patrick, Adam Czajka, and Patrick Flynn. "This Face Does Not Exist... But It Might Be Yours! Identity Leakage in Generative Models." Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision. 2021.
- Tinsley, Patrick, Adam Czajka, and Patrick Flynn. "Haven't I Seen You Before? Assessing Identity Leakage in Synthetic Irises." arXiv preprint arXiv:2211.05629 (2022). *- Accepted to IJCB 2022.*

Second Author

- Boyd, Aidan, Patrick Tinsley, Kevin Bowyer, and Adam Czajka. "CYBORG: Blending Human Saliency Into the Loss Improves Deep Learning." arXiv preprint arXiv:2112.00686 (2021). *- Accepted to WACV 2023.*
- Iloanusi, Ogechukwu, Patrick J. Flynn, and Patrick Tinsley. "Similarities in African Ethnic Faces from the Biometric Recognition Viewpoint." In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision, pp. 419-428. 2022.
- Khan, Siamul Karim, Patrick Tinsley, and Adam Czajka. "DeformIrisNet: An Identity-Preserving Model of Iris Texture Deformation." arXiv preprint arXiv:2207.08980 (2022). *- Accepted to WACV 2023.*
- Boyd, Aidan, Patrick Tinsley, Kevin Bowyer, and Adam Czajka. "The Value of AI Guidance in Human Examination of Synthetically-Generated Faces." arXiv preprint arXiv:2208.10544 (2022). *- Accepted to AAAI 2023.*

Skills

Programming	Python (Scikit-Learn, PyCaret, TensorFlow, PyTorch), R, Matlab, SAS, C/C++, HTML/CSS/JavaScript, SQL.
Miscellaneous	Linux, Bash scripting, LaTeX (Overleaf/Markdown), Tableau, Git, Google Drive, Microsoft Office.