Matthew Richardson Keaton

1280 Longdon Street ◆ Morgantown, WV 26505-2443 ◆ 304.319.1255
Matthew.Keaton28@gmail.com ◆ www.linkedin.com/in/matthew-keaton

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Computer Science / Computer Engineering / Mathematics

EDUCATION

West Virginia University (WVU), 2020 – Present
- Master of Science, Computer Science
- Current GPA: 4.00

West Virginia University (WVU), 2015 – 2019
- Bachelor of Science, Computer Science and Computer Engineering
- Minors in Mathematics and Physics

RESEARCH EXPERIENCE

Vision and Learning Group, Prof. Gianfranco Doretto – Lane Department of Computer Science & Electrical Engineering, WVU, 2020 – Present

- Ongoing research projects related to instance segmentation, attention-based methods for fine-grained visual classification, and few-shot domain adaptation/domain generalization

Multispectral Imagery Lab, Prof. Thirimachos Bourlai – Lane Department of Computer Science & Electrical Engineering, WVU, 2019

- Independently developed application involving voice detection through various mediums of audio, representing audio as spectrograms (2D representation of FFT) to apply convolutional neural networks

Auditory Development & Connectomics Laboratory, Prof. George Spirou – Rockefeller Neuroscience Institute, WVU, 2018

- Contributed to design of a machine learning algorithm to automatically detect and count the number of brain cells within a volume sample
- Assisted in the creation of a workflow document for interfacing with a 3D visualization tool developed within the lab
- Aided in the mapping of neurons in the Antero-Ventral Cochlear Nucleus of mouse brains – part of the ongoing efforts of The Human Connectome Project

PUBLICATIONS

- M. Keaton *et al.*, "Fine-Grained Visual Classification of Plant Species In The Wild: Object Detection as A Reinforced Means of Attention," arXiv preprint, 2021. Available: https://arxiv.org/abs/2106.02141
- M. Keaton *et al.*, "WiFi-based In-home Fall-detection Utility: Application of WiFi Channel State Information as a Fall Detection Service," in *2020 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC),* Jun. 2020, pp. 1–6, doi: 10.1109/ICE/ITMC49519.2020.9198407.

PRESENTATIONS

- *Fine-Grained Visual Classification of Plant Species In The Wild: Object Detection as A Reinforced Means of Attention*. CVPR 8th Workshop on Fine-Grained Visual Categorization. 2021; Virtual Event.
- *Plant Analysis In the Wild*. NSF-BBD-SPOKE Workshop on Plant Image Analysis. 2020; Virtual Event.
- *WiFi-based In-home Fall-detection Utility: Application of WiFi Channel State Information as a Fall Detection Service*. IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC). 2020; Cardiff, Wales.
- *Human Voice Scenario Source Classification*. West Virginia University Summer Undergraduate Research Experience Symposium. 2019; Morgantown, West Virginia.

HONORS, AWARDS, AND ACTIVITIES

- Recipient of WVU Summer Undergraduate Research Experience award 2019
- Recipient of WVU Honors College Passion Project Research Grant 2019
- Association of Computing Machinery 2019-Present
- Eta Kappa Nu (Electrical & Computer Engineering Honorary)
  - Vice President 2017-2019
- Upsilon Pi Epsilon (Computer Science Honorary)
  - Vice President 2018-2019
  - President 2021-Present
- Pi Mu Epsilon (Mathematics Honorary) 2018-2019
- Mortar Board (National College Senior Honor Society) 2018-2019
- Tau Beta Pi (Engineering Honorary) 2017-2019
- Institute of Electrical and Electronics Engineers 2016-Present
- Chimes (College-wide Academic Junior Honors Society) 2017-2018
- Student Partnership for the Advancement of Cosmic Exploration 2015-2017
- WVU Math Club
  - Vice President 2015-2016

PROFESSIONAL INDUSTRY EXPERIENCE

GE Aviation Leading Edge Advanced Propulsion (LEAP)-1B Engine Systems Certification Team, Cincinnati, OH, Summer 2017
Early Identification Program – Computer/Electrical Engineering Intern

- Engineering/Software Engineering work on the LEAP-1B Systems Certification team
- Automated a process for engine data retrieval from database (using Java and Excel)
- Reviewed and edited certification reports for Major Type Design Change plans
- Certification document tracking, process improvement, and general certification process support

GE Aviation/Unison Industries, Jacksonville, FL, Summer 2016
Early Identification Program – Aerospace Engineering Intern

- Discovered $120,000 of unutilized inventory within the plant, identified miscommunication issue causing wasted resources, and implemented sustainable workflow improvement to increase efficiency and task turnaround time
- Assisted with contract administration role, rescheduling out $13.5k/week inventory
- Learned plant processes and shadowed positions ranging from assembly to site management