Michael Vanden Heuvel

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Education

University of Wisconsin - Madison Sept. 2018 – Dec. 2022

Bachelor of Science in Computer Science, Certificate in Business Fundamentals

Research Projects

Informatics Skunkworks Group – University of Wisconsin Jan. 2020 – Dec. 2022

Renal Cell Carcinoma Neural Network - Undergraduate Researcher *Sept. 2022 - Dec. 2022*

- Developed data transformation pipeline to clean data and make MRI scans usable for neural network
- Utilized transfer learning to train convolutional neural network to classify renal cell carcinoma as low or high grade

Renal AML Classification and Regression - Undergraduate Researcher *Jan. 2022 - May 2022*

- Led two teams of undergraduate students in developing machine learning models
- Developed and evaluated machine learning and deep learning models to predict growth rate of renal AMLs and to classify renal AMLs as high or low growth

Pancreatic Cyst Classification - Undergraduate Researcher *Jan. 2020 - Jan. 2021*

- Acted as a lead of a 3-student development team to delegate tasks and maintain development schedule
- Developed machine learning models to classify pancreatic tumors with the goals of detecting potentially cancerous cysts early and reducing unnecessary surgeries
- Explored techniques such as oversampling, undersampling, and various metrics to mitigate the effects of an imbalanced dataset
- Identified key features in the model to identify medically relevant features

Publication and Workshop

- Awe, A. M., **Vanden Heuvel, M. M.**, Yuan, T., Rendell, V. R., Shen, M., Kampani, A., Liang, S., Morgan, D. D., Winslow, E. R., & Lubner, M. G. (2022). Machine learning principles applied to CT radiomics to predict mucinous pancreatic cysts. *Abdominal Radiology*, 47, 1–11. https://doi.org/10.1007/s00261-021-03289-0
- **Vanden Heuvel, M. M.** (2022, October 22) *Impact of machine learning focused research projects on my career path: an undergraduate perspective* [Virtual Workshop] Enhancing Undergraduate Research With Machine Learning, Madison, WI.
  https://skunkworks.engr.wisc.edu/free-workshop-enhancing-undergraduate-research-with-machine-learning/

Awards

2024 **National Science Foundation,** Computer Science Graduate Fellowship *$159,000*
2024 **Microsoft,** OneSOC Above and Beyond Award

Work Experience

Microsoft Mar. 2023 – Present

Microsoft Sentinel - Software Engineer *Redmond, WA*

- Led the development of a streamlined onboarding experience for Microsoft Sentinel within the Defender Portal to increase customer adoption of unified platform
- Led development of highly requested Bicep file support for Sentinel Repositories
- Led the maintenance and upkeep of Sentinel Repositories by promptly diagnosing and addressing bugs within the Sentinel Repositories service by investigating logs and collaborating directly with customers to deliver solutions
- Rewrote legacy Knockout code in React for Microsoft Sentinel settings, pricing, and connectors pages, allowing for the transition to the new Microsoft Defender platform
- Developed frontend for the Microsoft Defender and Sentinel unified onboarding wizard and settings page using React with TypeScript
- Developed an internal API for the unified Microsoft Sentinel and Defender customer onboarding, offboarding, and metadata retrieval using .NET and Azure Functions

Software Engineer Intern *May 2022 – Aug. 2022*

- Improved Microsoft Sentinel's front-end experience by fixing visual bugs and improving compatibility for themes
- Developed unit tests and implemented StyleCop to enforce stylistic requirements resulting in saved time during code review and consistent and clean code across repositories
- Collaborated with team's Software Reliability Engineer to implement time-to-live for recommendations database to ensure only relevant recommendations remained in the database
- Contributed to Microsoft's Diversity & Inclusion initiative by planning and hosting arts and crafts events to raise money for charities

Capital One June. 2021 – Aug. 2021

Software Engineering Intern *Remote - McLean, VA*

- Developed Apache Camel policies based on existing REST APIs to increase flexibility between policy versions and reduce onboarding time for future developers interacting with Capital One's platform
- Wrote Apache Camel policy to route image of customer's identification securely from customer to encrypted storage and machine learning model as part of authentication flow for accessing virtual credit card

Calimetrix Jan. 2021 – June 2021

Software Development Intern *Madison, WI*

- Trained a YOLOv4 object detection model to automate the detection of defects in MRI test objects and reduce time needed for quality control of MRI test objects
- Developed pipeline to convert MRI scans to 2D images, align images to a template, and detect defects

Leadership & Service

Microsoft GIVE Campaign Oct 2024

V-team member *Redmond, WA*

- Assisted in planning of Microsoft's GIVE month of charity for Microsoft Threat Protection Organization
- Organized potluck and ping pong tournament to raise money for local non-profits
- Organized volunteer event for 30 team members to package bulk cleaning items and diapers into family-sized portions for local non-profit Jubilee Reach
- Assisted in hosting the Microsoft Disabilities Employee Resource Group Town Hall for October 2024

University of Wisconsin - Data Science Programming I Jan. 2022 – Dec. 2022

Peer Mentor *Madison, WI*

- Guided students through weekly projects and practice problems during weekly lab section and office hours
- Organized and led mock exam and pre-exam study sessions attended by over 100 students
- Developed unique exam questions based on lecture and project material in coordination with other Peer Mentors
- Prepared exams and proctored sections for midterm and final exam

Scratch Club Sept. 2022 – Dec. 2022

After School Club Leader *Madison, WI*

- Designed and lead activities to help K-12 students learn computational thinking and computer programming
- Inspired creativity and critical thinking in students through games and coding demonstrations

Google Developer Student Club Aug. 2021 – Dec. 2022

Event Management Lead *Madison, WI*

- Tripled chapter membership by hosting events to develop members' professional and technical skills
- Co-founded and hosted an annual hackathon twice with over 100 participants to foster community and enhance technical skills of club members

Microsoft TEALS Aug. 2020 – June 2022

Volunteer Teaching Assistant *Remote - Shiocton, WI*

- Assisted in lesson planning and led lessons for introductory programming class teaching Snap! and Python for a rural high school
- Provided individualized lab support to high school students in an introductory computer science course

Technical Skills

Languages: Python, JavaScript, C#, Java, HTML, CSS, MATLAB
Frameworks: React, TypeScript, .NET, PyTorch
Developer Tools: Git, Azure, VS Code, Visual Studio, Eclipse
Libraries: scikit-learn, pandas, NumPy, Matplotlib, SHAP, TensorFlow, Recharts