# Chanel F. Cheng

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B.Sc. student at Rochester Institute of Technology. I am broadly interested in research that connects artificial intelligence and the biological brain and am working towards the ultimate goal of reconstructing brain functionality and human behavior.

## EDUCATION:

***Rochester Institute of Technology***, Rochester, NY
Bachelor of Science in Computer Science; 3.99 GPA; Expected May 2024

***Relevant Coursework:***
Machine Learning, Biorobotics/Cybernetics, Introduction to Biological Physics, Project-Based Calculus I & II, Multivariable & Vector Calculus, Differential Equations, Probability and Statistics, Linear Algebra

***Certificates and Awards*:**
RIT's Dean's List, Aug 2019 – Present
MIT Summer Research Program in Neuroscience Certificate, Aug 2023
Northeast Big Data Innovation Hub: Cybersecurity Student Research Award, Jan 2023
Biomedical Responsible Conduct of Research Certificate, Oct 2022
Cybersecurity Visiting Student Research Program Certificate, Jul 2022
The American Legion Scholastic Award, Aug 2020
RIT Presidential Scholarship, Aug 2019

## RESEARCH EXPERIENCE:

***MIT Summer Research Program Scholar***, Jun 2023 – Present
MIT McGovern Institute, Cambridge, MA

- Modeled divisive normalization in the central auditory pathway using convolutional neural networks, working with cochleagrams of human speech.
- Currently investigating the role of task optimization in the emergence of neural properties resulting from divisive normalization.

***Cybersecurity Visiting Student Research Program Scholar***, May 2022 – Jun 2023
RIT ESL Global Cybersecurity Institute, Rochester, NY

- Designed end-to-end continual learning models and data streams for cyber threat

assessment.
- Data homogenization and task-agnostic learning settings were explored, enabling the use of cross-organizational datasets.

***Air Force Research Lab Phillips Scholar***, May 2021 – Dec 2021
Air Force Research Laboratory, Albuquerque, NM
- Investigated advanced machine learning algorithms for parameter sensitivity analysis.
- Active learning surrogate models were demonstrated that reduced computational cost and introduced interactive queries for high power microwave optimization.

## PRESENTATIONS:

***Modeling Divisive Normalization in the Central Auditory Pathway With Convolutional Neural Networks*** presented at MIT Summer Research Program Symposium, Cambridge, MA, August 2023 (poster)

***Cross-Organizational Continual Learning of Cyber Threat Models*** presented at Annual Computer Security Applications Conference, Austin, TX, December 2022 (poster)

***Cross-Organizational Continual Learning of Cyber Threat Models*** presented at Cyber Visiting Student Research Program Symposium, Rochester, NY, August 2022 (oral)

## ORGANIZATIONS AND MEMBERSHIPS:

***RIT Neurotechnology Exploration Team***, Aug 2022 - Present
- Designed meta learning neural networks to predict emotional thought across multiple subjects in real-time using electroencephalogram (EEG) devices.

***RIT Artificial Intelligence Club***, Apr 2022 - Present
- Attended and organized weekly seminars exploring recent advances in machine learning and neural network applications

***Air Force Reserve Officers' Training Corps, Detachment 538***, Aug 2019 - Apr 2022
- Engaged in leadership activities and trained alongside fellow cadets in group leadership projects, field training exercises, and drill practice.

***Arnold Air Society, Colonel Andrew J. Dougherty Squadron***, Sep 2019 - Apr 2022
- Joined initiatives to foster partnerships with local organizations and enhance community education about the Air Force within the Rochester area

## TECHNICAL SKILLS:

- ***Computational***: Python, C++, C, MATLAB, Java, SciPy, Sklearn, PyTorch, Tensorflow, Brian/Brian2, SQL
- ***Hardware:*** Arduino, Raspberry Pi, OpenBCI EEG, BioRadio EMG/EOG/ECG
- ***Software***: Git, Vim, VS Code, Jupyter Notebook, IntelliJ, PyCharm, LaTeX, Microsoft Office, Google Drive Suite