Nicholas F. Liotta

+1 (012) 345-6789 | email@buffalo.edu | linkedin.com/in/nickliotta | github.com/nickliotta

Education

University at Buffalo August 2024 – December 2026
Bachelor of Science in Computer Science Buffalo, New York

- Minors in Mathematics and Psychology
- Concentration in Artificial Intelligence

Experience

The Feinstein Institutes for Medical Research May 2024 – Present
Consultant Bioinformatician, Advisors: Helena Reyes-Gopar, Nicholas Dopkins, Douglas F. Nixon Manhasset, New York

- Process and analyze single-cell RNA sequencing data in Seurat to investigate gene expression at the individual cell level, identifying distinct cell populations and cell-type markers, contributing to a deeper understanding of disease mechanisms
- Spearhead a bioinformatics collaboration with the Director of the Alzheimer's Disease Research Institute at Weill Cornell Medicine, analyzing single-cell and bulk RNA-Seq data from individuals living with Alzheimer's disease

Carnegie Mellon University May 2025 – August 2025
Undergraduate Research Assistant, Advisor: Jonathan S. Tsay Pittsburgh, Pennsylvania

- Selected as one of only twelve students nationwide for the NIH-funded Undergraduate Program in Neural Computation (uPNC), a joint initiative between Carnegie Mellon University and the University of Pittsburgh at the Center for the Neural Basis of Cognition
- Completed an intensive computational neuroscience bootcamp featuring lectures from faculty and graduate students
- Conducted a meta-analysis of 20 published experiments evaluating the effect of goal location on adaptation performance
- Investigated implicit and explicit processes of motor adaptation using multiple visuomotor rotation paradigms

Weill Cornell Medicine February 2022 – April 2024
Undergraduate Research Assistant; Advisors: Bhavya Singh, Jez L. Marston, Douglas F. Nixon New York, New York

- Identified potential human endogenous retrovirus (HERV) therapeutic targets for immunotherapy in bulk RNA sequencing data across multiple diseases and disorders with a focus on the relationship between the immune system and the brain
- Engaged in collaborative hands-on practical sessions, and group discussions between faculty from Weill Cornell Medicine and King's College London, focusing on single-cell and bulk retrotranscriptomics, and analyses of brain tissue, specifically the prefrontal cortex
- Compared human endogenous retrovirus profiles of human gut CD4+ T cells between people who are at-risk of developing HIV and are being treated with PrEP (pre-exposure prophylaxis), and people who are living with HIV and are under treatment with antiretroviral therapy in a collaboration with the University of Colorado School of Medicine

University of California, San Francisco January 2022 – August 2022
High School Student Researcher; Advisor: Mehdi Bouhaddou, Nevan J. Krogan San Francisco, California

- Processed statistical analysis and computationally modeled biological information from mass spectrometry-based proteomics data
- Performed gene set enrichment analysis (GSEA software) based on canonical pathways, corum, and gene ontology to analyze differential gene expression in knockout and wild-type human cells with a disrupted Sacsin gene protein network

Leadership Experience

Cold Spring Harbor Laboratory January 2022 – Present
Head College Intern Cold Spring Harbor, New York

- Coordinate a collaborative team of 30+ high school and undergraduate students, fostering teamwork and efficient workflow for laboratory experiments, and ensuring successful execution of educational programs for visiting students

Projects

SARS-CoV-2 Genomic Mutation Map | *Python, Pandas, NumPy, Matplotlib*

- Constructed a computational model based on data from statistical analysis and implemented an algorithm to accurately depict positions of genetic mutations and amino acids from each SARS-CoV-2 variant of concern. Work published in peer-reviewed scientific journal, *Cell* under postdoctoral associate Mehdi Bouhaddou at the University of California, San Francisco

Doh.codes | *Ubuntu, Git, Python (Flask), JavaScript (Node)*

- Developed a community of chatbots for the Discord social media platform, facilitating interactions with 500,000 users daily across over 5,000 communities. Deployed on a virtual private server hosting Ubuntu, the system included a REST API for backend interactions, seamlessly integrating external platforms like Reddit, Twitch, YouTube, and Cat generators

Peer-reviewed Publications

"Endogenous retroelement expression in modeled airway epithelial repair." *Microbes and Infection.* (2024) Stephanie Michael, **Nicholas Liotta**, Tongyi Fei, Matthew L. Bendall, Douglas F. Nixon, Nicholas Dopkins. doi: 10.1016/j.micinf.2024.105465

"Endogenous retroelement expression in the gut microenvironment of people living with HIV-1." *eBioMedicine.* (2024) Nicholas Dopkins, Tongyi Fei, Stephanie Michael, **Nicholas Liotta**, Kejun Guo, Kaylee L. Mickens, Brad S. Barrett, Matthew L. Bendall, Stephanie M. Dillon, Cara C. Wilson, Mario L. Santiago, Douglas F. Nixon. doi: 10.1016/j.ebiom.2024.105133

"SARS-CoV-2 variants evolve convergent strategies to remodel the host response." *Cell.* (2023) Mehdi Bouhaddou, Ann-Kathrin Reuschl, Benjamin J. Polacco, Lucy G. Thorne, Manisha R. Ummadi, et. al (including **Nicholas F. Liotta**) doi: 10.1016/j.cell.2023.08.026

Abstracts, Posters, and Presentations

"Differential effects of goal location on implicit and explicit motor adaptation." *Computational Neuroscience Day, Carnegie Mellon University.* (August, 2025) **Nicholas F. Liotta**, Owen Sapp, Jonathan S. Tsay. (Poster Presentation)

"Transposable elements in human health and disease." *Transposable Elements, Cold Spring Harbor Laboratory.* (October, 2024) Douglas F. Nixon, Helena Reyes-Gopar, Jez L. Marston, Luis P. Iñiguez, et. al (including **Nicholas Liotta**) (Abstract Presentation)

"Interferon-driven modulation of retrotransposon expression in gut CD4+ T cells." *Weill Cornell Medicine Department of Medicine Research Retreat.* (September, 2023) Stephanie Michael, **Nicholas Liotta**, Tongyi Fei, Matthew L. Bendall, Douglas F. Nixon, Nicholas Dopkins. (Poster Presentation)

"Influence of HIV-1 infection status on retrotransposon expression in the gut microenvironment." *Weill Cornell Medicine Department of Medicine Research Retreat.* (September, 2023) Nicholas Dopkins, Stephanie Michael, **Nicholas Liotta**, Tongyi Fei, Matthew L. Bendall, Douglas F. Nixon. (Poster Presentation)

"Endogenous Retroelement Expression in the Gut Microenvironment of PLWH." *HOPE Annual Meeting.* (September, 2023) Nicholas Dopkins, Tongyi Fei, Stephanie Michael, **Nicholas Liotta**, Kejun Guo, Kaylee L. Mickens, Brad S. Barrett, Matthew L. Bendall, Stephanie M. Dillon, Cara C. Wilson, Douglas F. Nixon, Mario L. Santiago (Poster Presentation)

Technical Skills

Languages: Python, Java, JavaScript, R, C, LaTeX
Developer Tools: Anaconda, Git, Linux (Ubuntu and CentOS), CLI, AWS, Google Cloud, Emacs, Vim, Visual Studio Code
Bioinformatics Tools: Bioconductor, Seurat, Azimuth, Snakemake, SnapGene, SoloTE, Telescope, FastQC, Genome Browser