Reinaldo Mock

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Education

Georgia Institute of Technology **August 2024 - May 2028 (Exp.)**
Doctor of Philosophy in Machine Learning, School of Industrial and Systems Engineering *Atlanta, Georgia*
Advisor: Professor Jing Li

Georgia Institute of Technology **August 2022 - May 2024**
Bachelor of Science in Biomedical Engineering, Minor in Applied Mathematics *Atlanta, Georgia*

Experience

Cofounder & Head of Research, Athletisense **May 2023 – Present**
Athletisense Inc. *Atlanta, Georgia*

- Researching and developing assistive brace to aid in the recovery of athletes.

Undergraduate Researcher, Georgia Institute of Technology **August 2022 – May 2024**
Machine Learning and Optimization of Manufacturing Systems *Atlanta, Georgia*

- Machine Learning and Process Optimization for 3D Printing Processes.

Undergraduate Research Fellow, University of Tennessee - Knoxville **June 2022 – August 2022**
Microelectronics and Bio-Sensor Systems Internship *Knoxville, Tennessee*

- Researched, developed, manufactured, and tested ion-sensitive electrodes for heavy metal detection.

Undergraduate Researcher, Georgia Institute of Technology **January 2022 – May 2022**
Long COVID Physiological Signal Monitoring Device *Atlanta, Georgia*

- Created secure device to store and analyze body signals, averting cardiovascular risks due to long COVID.

Undergraduate Researcher, Georgia Institute of Technology **July 2021 – May 2022**
Optical Imaging and Spectroscopy Lab *Atlanta, Georgia*

- Imaged UV prostate tissue for intratumor/extratumor structure disparities in prostate cancer patients' samples.

Publications

∗ M. Biehler, D. Lin, **R. Mock**, J. Shi (2024). 4DYNAMO: Analyzing and Optimizing Process Parameters in 4D Printing for Dynamic 3D Shape Morphing Accuracy, *ASME Transactions, Journal of Manufacturing Science and Engineering.* **Winner, Best Track Paper Award**: Quality Statistics and Reliability (QSR), INFORMS, 2024.

∗ M. Biehler, **R. Mock**, S. Kode, M. Mehmood, P. Bhardwaj, J. Shi (2023). AUDIT: Functional Qualification in Additive Manufacturing via Physical and Digital Twins. Journal of Manufacturing Science and Engineering Feb 2024, 146(2): 021001.

∗ M. Biehler, **R. Mock**, J. Shi (2023+). Stealthy Attacks on 3D Printing Systems. To be submitted to *ASME Transactions, Journal of Manufacturing Science and Engineering.*

Projects

Advanced Genetic Motif Finding Algorithm using Gibbs Sampling **January 2024 – May 2024**
Project Lead *Georgia Institute of Technology*

- Led a successful genetic sequence motif finding project with two team members, designing and testing an algorithm achieving 100% motif detection across varied lengths and entropy, while adhering to stringent criteria.

Novel Treatment Investigation for Aggressive Prostate Cancer **January 2024 – May 2024**
Georgia Institute of Technology

- Led a research project with four students evaluating Ipatasertib's efficacy, a glioblastoma medication, as a potential treatment for aggressive prostate cancer, utilizing DU145 cells to assess cytotoxic effects and apoptosis induction mechanisms, yielding promising results.

Using Tremor Classification to Determine Parkinson's Disease Progression **January 2024 – May 2024**
Project Lead *Georgia Institute of Technology*

- Led a novel project with four team members to develop a Parkinson's Disease progression assessment model using wrist accelerometer data, achieving a 75% accuracy with a KNN model on a limited dataset, potentially revolutionizing diagnosis and treatment monitoring, with plans for multi-accelerometer sensor integration and enhanced prediction capabilities through a "signal estimator mask" implementation.

Vitals Untethered - The Butterfly: Revolutionizing Vital Sign Monitoring **January 2024 – May 2024**
Georgia Institute of Technology

- Led a transformative project with a team of four to develop The Butterfly, a pioneering single-sticker solution for vital sign monitoring aiming to enhance patient mobility by over 400% and reduce costs by over 85%, while maintaining 99% signal accuracy, achieved through extensive research, iterative design, and rigorous testing.

Impact of Ambient Lighting and Screen Size on Blink Rate **August 2023 – December 2023**
Project Lead *Georgia Institute of Technology*

- Led a team study on the effects of ambient lighting and screen size on blink rate, managing 24 participants, revealing a significant relationship between screen size and blink rate, offering insights to mitigate digital eye strain and optimize screen usage habits.

Transfer Device for Mobility Impaired Patients **August 2023 – December 2023**
Project Lead *Georgia Institute of Technology*

- Ideated and prototyped a single user device to assist caregivers with safely lifting and transferring mobility impaired patients in both at home and clinical settings. Executed user interviews, rapid prototyping, Fusion 360 modeling, and analysis of manufacturing, cost, and path to market.

Awards / Scholarships

President's Undergraduate Researcher Award - Georgia Institute of Technology **Fall 2023**

- Award given to 40 undergraduate researchers out of the whole undergraduate student body at Georgia Tech.

NSF REU - Georgia Institute of Technology **Summer 2023**

- Cyber-threat Detection and Diagnosis in Multistage Manufacturing Systems through Cyber and Physical Stream Data Analytics

NSF REU - University of Tennessee, Knoxville **Summer 2022**

- Microelectronics and Sensor Systems: Ion Sensitive Electrodes (ISE) for Aqueous detection of Heavy Metal

West Point Scholar Fund - Georgia Institute of Technology **Fall 2020 – Spring 2024**

- Scholarship that is awarded to 20 students in middle Georgia that are pursuing higher education in the STEM field.

Georgia Zell Miller Scholarship - Georgia Institute of Technology **Fall 2020 – Spring 2024**

- Tuition scholarship for high performing undergrad students.

GT - ESTEEMED - Georgia Institute of Technology **Fall 2020 – Spring 2022**

- Prestigious $\$12,000$ award given to an elite cohort that is designed to build future researchers in biomedical engineering and biomedical sciences.