Ahmed Agiza

Full Portfolio: agiza.me | **E-mail**: ahmed@agiza.me | **GitHub**: github.com/ahmed-agiza

Work Experience

Aug 2024 – Present **Machine Learning Research Scientist,** Meta, Sunnyvale, U.S.
- Developing ML models with the upstream representation learning team.

June 2022 – Aug 2022 **Applied Deep Learning Research Intern**, NVIDIA, Santa Clara, U.S.
- Developed deep learning models for optimizing EDA flows.

July 2015 – Aug 2019 **Co-founder and Team Lead**, Cloud V, Egypt
- Developed online digital design IDE with collaboration and project management.

Jan 2018 – July 2019 **Senior Technical Consultant**, Efabless, U.S.
- Developed tools and infrastructure for hardware design and synthesis.

July 2017 – Dec 2017 **Backend and AI Developer,** The D. GmbH, Egypt
- Developed the backend and the chatbot of CUJU mobile application.

Aug 2015 – Sep 2015 **Software Engineering Intern**, Mentor Graphics, Egypt
- Designed xtUML models and xtUML to Symbolic Analysis Laboratory model compiler.

Dec 2014 – Aug 2015 **Undergraduate Teaching Assistant,** AUC, Egypt
- Explained and helped the students with the following courses: Mobile Applications, OOP, Assembly Language, and Calculus.

Education

2019 – 2024 **Ph.D., Computer Science, Brown University**
- Research Assistant at Brown's SCALE lab.
- Research areas: Machine Learning, EDA, Compiler Design, Efficient AI, Parallel Programming, Combinatorial Optimizations, Number Theory.

2019 – 2023 **M.Sc., Computer Science, Brown University**

2012 – 2017 **B.Sc, Computer Engineering, American University in Cairo**

Featured Projects

2024 **PoliTune**
- Developed a framework and datasets for instilling and evaluating political bias in large language models (LLMs). Presented at the **7th AAAI/ACM Conference on AI, Ethics, and Society (AIES-24**). github.com/scale-lab/PoliTune

2024 **MTLoRA**
- Designed a novel Multi-Task Learning (MTL) framework that uses Low-Rank Adaptation (LoRA) to mitigate gradient conflicts in MTL models. **Presented at CVPR 2024**. github.com/scale-lab/MTLoRA

2022 **GraPhSyM,** NVIDIA
- Developed Graph Attention Network model for design metrics estimations for NVIDIA's optimization frameworks. Presented at **ICCAD 2023**. arxiv.org/abs/2308.03944

2020 **EDAV: EDA Viewer**
- Built an open-source online hardware design renderer using WebGL: edaviewer.com.

2019 **OpenPhySyn**
- Developed and maintained an open-source physical optimization engine. Presented at **2020 Workshop on Open-Source EDA Technology (WOSET).** github.com/scale-lab/OpenPhySyn

2017 **AutoARC**

- Developed a complete system for automating custom process package generation, including hardware description, assembler, simulator, and IDE using a simple ISA descriptor.

2016 **Spycrafter**, Embedded Systems Project

- Developed an embedded system of synchronized robots for area navigation & mapping.
- Won the best project in Microsoft's Embedded Day 2016.

2015 **Icarus**

- Developed a fault-tolerant distributed system for steganography encrypted image sharing.

2014 **NAgiza Gaming Console**

- Developed Gaming console ISA built on FPGA with an online assembler using Verilog and JavaScript.

2011 **3D Modeling Portfolio**

- Designed a modeling portfolio including Characters modeling and animation, architectural previsualization, Automotive modeling, and Interior modeling.

Technical Skills

Programming Languages: C/C++, Python, Go, Javascript, Verilog, CUDA, Tcl, MIPS, Ruby, PHP, Java, and Solidity.
Frameworks: Tensorflow, PyTorch, Node.js, Django, Ruby on Rails, React.js, Android, and Qt C++.
Databases: SQL (MySQL, Microsoft SQL, PostgreSQL), NoSQL (MongoDB), GraphQL, and Redis.
Tools & Infrastructure: MLIR & Compiler Design, Triton, Docker, DevOps, Serverless Architectures, and JIRA.

Publications

- **Agiza, Ahmed**, Marina Neseem, Sherief Reda. "MTLoRA: A Low-Rank Adaptation Approach for Efficient Multi-Task Learning" *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. (CVPR). 2024. **[Highlight Paper]**
- **Agiza, Ahmed,** Mohamed Mostagir, and Sherief Reda. "PoliTune: Analyzing the Impact of Data Selection and Fine-Tuning on Economic and Political Biases in Large Language Models." *Proceedings of the 2024 AAAI/ACM Conference on AI, Ethics, and Society*. 2024.
- **Agiza, Ahmed**, Rajarshi Roy, Teodor Dumitru Ene, Saad Godil, Sherief Reda, Bryan Catanzaro. "GraPhSyM: Graph Physical Synthesis Model." *Proceedings of the 42nd International Conference on Computer-Aided Design (ICCAD).* 2023.
- Neseem, Marina, **Ahmed Agiza**, and Sherief Reda. "AdaMTL: Adaptive Input-dependent Inference for Efficient Multi-Task Learning." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2023.
- **Agiza, Ahmed A.**, Kady Oakley, Jacob K. Rosenstein, Brenda M. Rubenstein, Eunsuk Kim, Marc Riedel, and Sherief Reda. "Digital circuits and neural networks based on acid-base chemistry implemented by robotic fluid handling." *Nature communications* 14.1 (2023): 496.
- **Agiza, Ahmed**, Stephen Marriott, Jacob K. Rosenstein, Eunsuk Kim, and Sherief Reda. "pH-Controlled enzymatic computing for digital circuits and neural networks." *Physical Chemistry Chemical Physics* 26.31 (2024): 20898-20907.
- **Agiza, Ahmed**, and Sherief Reda. " OpenPhySyn: An Open-Source Physical Synthesis Optimization Toolkit." *2020 Workshop on Open-Source EDA Technology (WOSET)*. 2020.