Claudemi Nascimento

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Education

West Virginia University — Morgantown, West Virginia
Ph.D. in Chemical Enginerring — *Jan 2022 – Present*

Federal University of Campina Grande — Paraiba, Brazil
M.Sc. in Chemical Enginerring — *September 2018 – December 2021*
B.sc in Chemical Enginerring — *May 2013 – August 2018*

Skills

Languages:C#, Python, MATLAB, R

Technologies: Git, SQLite

Softwares: Ansys CFX, Aspen Plus, AVEVA Process Simulation

Experience

West Virginia University — Morgantown, West Virginia
Graduate Research Assistant — *Jan 2022 – Present, Part-time*

- Developed a Qt-based chat application featuring real-time communication capabilities over a client-server architecture using the TCP and OpenDDS protocols.

SemperTech — Istanbul, Turkey
Software Engineer — *Sep 2023 – Dec 2023, Full-time*

- Worked on the "Arçelik Digital Home Energy" project in a collaborative effort with DAI-Labor at the Technical University of Berlin under the supervision of Prof. Dr. Şahin Albayrak.
- Simulated data exchange processes with the EEBUS protocol suite using C# and Go frameworks. Migrated the entire framework from Go to C++ in order to ensure future adaptability for smart home IoT devices.
- Implemented the TLS protocol for secure data exchange using the X.509 standard and integrated multicast DNS for seamless communication, complementing the development of EEBUS protocols.

Max Planck Institute for Intelligent Systems — Stuttgart, Baden-Württemberg, Germany
Undergraduate Researcher — *Jun 2022 – Aug 2022, Internship*

- Worked in the Robotics, Collectives and Learning subgroup at the Physical Intelligence Department with former Ph.D. students Sinan Özgün Demir and Alp Can Karacakol on a project about 3D printing and heat-assisted magnetic programming of soft machines under the supervision of Prof. Dr. Metin Sitti.
- Updated a ROS package for converting 3D motion controller events to ROS messages so that it synchronously operates at any given loop rate with C++.
- Implemented an Arduino Mega driver for controlling a fluid dispenser, a laser, thermocouples, and a coil set. Updated ROS nodes for parsing G-codes and controlling stage movement and built the ROS-Arduino communication network to simulate a 3D printing and magnetic programming process with Python.

Nanonetworking Research Group, Boğaziçi University — Istanbul, Turkey
Undergraduate Researcher — *Oct 2021 – Jun 2022, Part-time*

- Worked on the "Design and Implementation of Molecular Communication Systems Using Index Modulation" project under the supervision of Prof. Dr. Ali Emre Pusane.
- Simulated the Brownian motion of molecules in a SISO MCvD system and predicted simulation parameters such as receiver radius, diffusion coefficient, and transmitter-receiver distance using CNNs with Keras and TensorFlow.
- Ran Monte Carlo simulations of the Gaussian model to encode/decode randomized binary sequences in a SISO MCvD system using BCSK modulation technique and calculated the bit error rate on Z-channel.

SESTEK Speech Enabled Software Technologies — Istanbul, Turkey
AI Research and Development Intern — *Jan 2022 – Feb 2022, Internship*

- Implemented various NLP tasks, including NER, POS tagging, sentiment analysis, text classification, and extractive/generative QA using transformers and Hugging Face libraries. Conducted a literature review on information retrieval and reading comprehension to stay updated on the state-of-the-art ML models.

- Developed a generative question answering system with Dense Passage Retrieval and Retrieval-Augmented Generation techniques using the Haystack framework on Python.
- Worked on a Turkish open-domain question answering system by fine-tuning a BERT base model transformer with PyTorch. Tabularized exact match and F1 scores using Turkish data sets and DeepMind's XQuAD data set.

Meteksan Defense Industry Inc. Ankara, Turkey

Analog Design Engineering Intern *Jul 2021 – Aug 2021, Internship*

- Designed and simulated numerous analog circuits such as voltage-mode controlled buck converter, phase-shifted full-bridge isolated DC-DC converter, and EMI filters with LTspice. Integrated these circuits and implemented a 320 W power distribution unit to be used in a radar system's power circuit board.
- Researched real-world compatible electronic components to be used in such circuits including GaNFETs, high-side gate drivers, and Schottky diodes.
- Assembled PCBs of both common and differential mode filters and used VNA Bode 100 to measure the cut-off frequencies.

Awards & Achievements

High Honors Degree: Awarded to Bachelor alumni who have graduated with a GPA greater than or equal to 3.50 by Boğaziçi University. (Jul 2023)

TÜBİTAK 2247-C Intern Researcher Scholarship: Awarded to students who take part in research projects carried out by the Scientific and Technological Research Council of Turkey (TÜBİTAK). (Dec 2021 – Jun 2022)

KYK Outstanding Success Scholarship: Awarded to students who have been ranked in the top 100 on National University Admission Exam by Higher Education Credit and Hostels Institution (KYK). (Sep 2018 – Jun 2023)

Kocaeli Science High School Valedictorian Award: Graduated as the highest ranked student. (Jun 2018)

Projects

Filters and Fractals | *GitHub*

- A C project which implements a variety of image processing operations that manipulate the size, filter, brightness, contrast, saturation, and other properties of PPM images from scratch and recursive fractal generation functions to model popular fractals including Mandelbrot set, Julia set, Koch curve, Barnsley fern, and Sierpinski triangle.

Chess Bot | *GitHub*

- A C++ project in which you can play chess against an AI with a specified decision tree depth that uses alpha-beta pruning algorithm to predict the optimal move. Aside from basic moves, this mini chess engine also implements chess rules such as castling, en passant, fifty-move rule, threefold repetition, and pawn promotion.

DS&A Projects | *GitHub*

- Five Java projects that apply DS&A concepts such as discrete-event simulation using priority queues, Dijkstra's shortest path algorithm, Prim's algorithm to find the minimum spanning tree, Dinic's algorithm for maximum flow problems, and weighted job scheduling with dynamic programming to real-world problems.