Nicklas **Holmberg**

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EDUCATION

Bachelor of Science (B.S.)
Major: Mathematics - Computer Science, Minor: Economics **Jun 2021**
University of California - San Diego (UCSD) — La Jolla, CA, USA
GPA: 3.837/4.0, Cum Laude Honors

SKILLS

- Cloud systems including AWS
- API frameworks including Flask-RESTful, Spring Boot, Gin
- MATLAB
- Machine Learning frameworks, TensorFlow, Pytorch
- SQL (MySQL, PostgreSQL, NoSQL)
- Bash / Shell / Git

RELATED EXPERIENCE

ChromaCode Inc - San Diego, CA, USA
Software Engineer **September 2021 to current**

- Redesigned the company's signal processing pipeline from a Kubernetes-based system using EKS (AWS Kubernetes Service) to a serverless pipeline using AWS Step Functions and containerized micro services. Instead of using static AWS servers (EC2s), using lambda functions was more scalable and cost efficient. This change has cut the company's related AWS costs by over 15 %.
- Built out a public facing API to support a LIMS (Laboratory Information Management System) integration with costumers' internal software directly. This provided customers the option to directly analyze their cancer tests using our software without manually going through our website.
- Wrote multiple Golang-based APIs to interface with backend systems, resulting in better data integration and real-time query responses. This was done by deconstructing an outdated and bloated Flask/Marshmallow-based data management service into Golang-based APIs with Redis caching.
- Wrote a multithreaded parser service in Golang that feeds the downstream AWS-based analysis pipeline with genomic data from our oncology cancer tests. The test result files that needed to be parsed were all >1 GB in size and came in several different formats, including .xls, .xlsx, .sds, .eds, .txt, etc.

Hitachi Energy Inc - Vasteras, Sweden
Software Engineering Intern **Jun 2019 to Sept 2019**

- Developed a battery storage system design tool using MATLAB and TensorFlow. The tool considered customer-specified parameters as constraints, along with historical energy usage data. The focus was on optimizing the state of charge (SoC) of battery systems, ensuring optimal performance within given hardware limitations and design specifications, with an emphasis on minimizing costs.
- The tool contributed to a 3% improvement in battery utilization efficiency without increasing costs.

ABB Facts Ltd - Vasteras, Sweden
Development Engineering Intern **Jun 2018 to Sept 2018**

- Developed a MATLAB-based application for data visualization and validation, designed to be used with other internal power quality and grid stability analysis applications. The tool, designed with a Rest API for efficient data retrieval and manipulation, enabled easy integration with other software systems.

ABB Facts Ltd - Vasteras , Sweden
Development Engineering Intern **Jun 2015 to Sept 2015 & Jun 2016 to Sept 2016**

- Created a MATLAB-based RAM (Reliability, Availability, Maintainability) application for ABB FACTS' internal software, utilizing functionality from the MATLAB Optimization Toolbox to optimize spare parts management.
- Implemented the tool, resulting in a 3-4% cost reduction in operations by fine-tuning cost-efficiency and enhancing profitability.

PERSONAL PROJECTS

Complex Activation Functions for CVNNs **Jan 2021 to Current**

- Analyzed the efficacy of various complex-valued activation functions used in Complex Valued Neural Networks (CVNNs), exploring their impact in machine learning applications. This research was particularly centered on enhancing complex valued data analysis in applications such as signal processing.

Financial Modeling Project **Jan 2018 to Jan 2020**

- Developed a serverless, AWS-based workflow to monitor stock price movements, leveraging CloudWatch Events for minute-by-minute tracking. Utilized Yahoo Finance API to fetch stock data, indexed in DynamoDB, enabling real-time analysis of significant price changes. Implemented a notification system using AWS Lambda, DynamoDB Streams, and Simple Email Service.

ACTIVITIES AND AWARDS

- Member of Caledonian Society for academic excellence at UC San Diego, 2021
- Graduated with Cum Laude Honors, UC San Diego, 2021
- Provost Honors at UCSD – 2017, 2018, 2019, 2020, 2021
- Honors recipient of the Leif Anders Bergqvist foundation for academic excellence, Rudbeckianska High School, Vasteras, Sweden, 2017