Grant Barland

Electrical Engineer

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EDUCATION

UNIVERSITY OF MINNESOTA, Minneapolis, MN — JUNE 2021

Carlson School of Management - Candidate for **Masters of Science in Business Analytics**

UNIVERSITY OF SAINT THOMAS, St. Paul, MN — SEPTEMBER 2015 - JUNE 2019

Bachelor of Science - Electrical Engineering, 3.6 GPA, Cum Laude

EXPERIENCE

UNIFIED THEORY INC, Woodbury, MN — JUNE 2019 - PRESENT

Electrical Engineer

- Organized the Electrical Power and Lighting design for a $3M Feed Mill construction project using AutoCAD and Revit.
- Designed Industrial power and lighting systems according to NEC and NFPA regulatory codes.
- Oversaw budgeting and client communications during the electrical design of a $2.5M chiller upgrade project.
- Implemented SKM PowerTools to perform Arc Flash Evaluation studies of two industrial plants in order to ensure the safety of onsite workers and compliance with electrical safety codes.
- Developed extensive reports documenting the findings of hazardous area classification studies. These reports identified hazardous solvents present during manufacturing that could endanger workers, and presented mitigation techniques with cost estimates.

GREAT RIVER ENERGY, Maple Grove, MN — AUGUST 2017 - JUNE 2019

Transmission Engineer Intern

- Utilized PLS-CADD to design and install $1.5M of transmission line equipment that was damaged in storms or required upgrading. This required overseeing the construction team and resolving any installation problems in the field.
- Applied SQL programming to maintain a database of transmission equipment attributes. This database contained millions of components and was used to make predictions about potential transmission line failures.
- Coordinated with vendors to order the correct equipment and ensure the delivery to construction sites.

PROJECTS

AntLights™ Product Development — SEPTEMBER 2018 - JUNE 2019

St. Thomas Engineering Capstone Project

- Developed a bicycle LED tail light system to signal braking, turn signals, and strobing effects while riding.
- Designed a complete electronic system for user control of the LEDs. In order to communicate with the tail lights from the front handlebar buttons, a bluetooth communication protocol was utilized on an ESP32 microcontroller powered via lithium battery that required a unique PCB to regulate the output voltage and charging capacity.
- Presented project development during the year to an entrepreneurial client in order to assess commercial viability.

QR Code Encryption Research — JUNE 2017 - JANUARY 2018

St. Thomas Mathematics Department

- Developed a QR code program with Public-key encryption security using Python.
- Studied Reed-Solomon Error Correction, Galois field arithmetic, and polynomial long division in order to write the encoding functions in the Python program.
- Created a GUI with TkInter to produce an executable windows application with user customizable encoding schemes.

AWARDS

UST Center for Applied Mathematics - Outstanding Research Award — JANUARY 2018

- Recognized as the top research project amongst 12 faculty research teams in the St. Thomas Mathematics department for my research about QR code encryption security.
- Awarded the opportunity to present the research at a national Mathematics conference.