

# NAVRAJ SINGH KAMBO

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## CAREER SUMMARY

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Junior Electrical Engineer with 1 year of combined experience working in industrial environments, primarily focused on implementation of communications systems and R&D. Excellent interpersonal and communication abilities, and possess a wide range of technical skills. Enjoys being part of a team, and thrives in high pressure and challenging working environments.

## TECHNICAL STRENGTHS AND CORE COMPETENCIES

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- Knowledgeable in AC (single and three phase) and DC electronic circuit theory
- Insightful in control theory, and industrial control system design (Siemens PLC and DeltaV DCS)
- Experience with control valve sizing, sensor selection, and instrumentation signalling (ISA 5.1)

**Modeling and Analysis**      AutoCad, SolidWorks, Fusion 360, MATLAB, LTSpice, git  
**Software & Tools**              MS Office, L<sup>A</sup>T<sub>E</sub>X, Altium Designer, Python, C++, JavaScript, Verilog

## EDUCATION

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**British Columbia Institute of Technology, Burnaby**  
Bachelor in Engineering, Electrical  
*Graduated with Distinction*

*September 2015 - May 2019*  
Overall GPA: 85%

## WORK EXPERIENCE

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**British Columbia Institute of Technology, Burnaby**  
*Research Intern*

*May 2018 - August 2018*

- Created a working prototype of a cross-platform mobile application (iOS Android) for use in Haiti on concrete bricks
- Carried out peak-finding algorithm development associated with concrete testing
- Implemented and debugged time-domain impulse detection algorithm for mobile devices
- Learned the React-Native extension of JavaScript, and basic Java

**Wireless Technical Services Inc., Coquitlam**  
*Co-op Student*

*April 2017 - August 2017*

- Worked on the Fortis BC Radio Network (FBCRN) project, including helping point out a possible vulnerability using software defined radio (SDR) technology
- Designed and implemented software in python for network device convenience and maintenance
- Carried out Rack Acceptance Tests (RATs) for quality assurance purposes
- Worked with various hand and power tools when manufacturing a communications rack

**BKS Cablecom Ltd., Burnaby**  
*Jr. Technician*

*May 2016 - August 2016*

- Installed, and tested data cabling for data and voice systems
- Labeled and assembled patch panel assemblies, and upgraded wireless networking equipment
- Terminated AMP and Belden shielded/unshielded category cables with proprietary tools
- Worked along side Sr Technicians, Electricians and UBC IT services on various projects
- Learned and applied de-facto standards in the telecommunications installation industry

## PROJECTS

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### Autonomous Vineyard Harvesting

Our senior engineering capstone group aimed to improve on current grape picking systems by developing a robotic vehicle that can harvest grape crops autonomously and selectively. It was required to navigate a vineyard without the need for human intervention, work during all times of the day, and successfully detect and harvest wine grape crops using cutting-edge vision technologies, robotics, and various engineering methods we've acquired at BCIT.

### Heat Exchanger Modeling and Controller Design

As part of the Industrial Control Systems course at BCIT, I was tasked with designing a temperature-flow cascade control strategy to regulate the outlet water temperature of a particular gas-liquid heat exchanger, incorporating disturbances such as steam header pressure, inlet water temperature, and water flow-rate. A model of the heat exchanger was also created in a DeltaV virtual machine.

### Automated Writing Utensil

For my embedded systems term project, I designed and implemented a simple P-D controller for two Quanser SRV02 motors using a real-time embedded system (*TMS320F28027*). Parts were fabricated (PLA printing) to allow a pen to draw anywhere within a  $36\text{in}^2$  square. This project involved interfacing the RTES to external hardware including power amplifiers and quadrature encoders, through the use of various communications standards (SPI & SCI for example).

### Self Driving Maze Navigation Car

In a group of 2, my partner and I were able to design and implement a self driving car that was able to solve a maze. The maze included colored markers to indicate turning directions, requiring the use of computer vision. A custom PCB was assembled to hold components needed for the vehicle.

## ACADEMIC ACHIEVEMENTS

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- 2019 BCIT Student Innovation Challenge: 2<sup>nd</sup> place
- 2018 NSERC Undergraduate Student Research Award (USRA) recipient
- 2017 APEGBC Scholarship recipient
- 2015 Burnaby Central Alumni Scholarship, Top student Electronics 10 and PE 12
- 2014 Vancouver High School Science Olympics Eastern league event: 1<sup>st</sup> place

## VOLUNTEER EXPERIENCE

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### Guru Nanak's Free Kitchen, East Vancouver

*September 2013 - Present*

*Dishwasher*

- Serving lunch to residents of Vancouver's downtown east side
- Assisting with washing and cleanup before and after lunch
- Working along side church and community center staff

## EXTRA-CURRICULAR INTERESTS

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- Snowboarding
- Playing and watching soccer and basketball
- 3D printing knick-knacks
- Participating in the Sun Run (annual participant)
- Road and mountain biking enthusiast