Divas Subedi

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Education

B.S. in Physics and Computer Engineering *Expected May 2022*
Trinity College *Hartford, CT, USA*
- Cumulative GPA: 4.1 / 4.0

Honors
- Thomas Holland Scholar
- The Albert J. Howard Jr. Prize
- Engineering Junior Book Prize
- Theodore R. Blakeslee II Award
- Second Year Phi Gamma Delta Prize in Mathematics
- Faculty Honors (All semester)

Courseworks
- Quantum Mechanics
- Classical Mechanics
- Abstract Algebra
- Applied Linear Algebra
- Electrodynamics
- Partial Differential Equations
- Microprocessor Systems
- Digital Signal Processing

Experience

Intern *May 2021 - Aug 201*
Fermi National Laboratory / DUNE at LBNF *Batalavia, IL, USA*
- Designed and coded firmware on ground impedance monitor for isolation of ground for DUNE-LBNF far side detector
- Implement signal processing models in FPGA for impedance monitoring
- Created and managed code-base for circuit element parameter optimization using LTSPICE and Python

Trainee *May 2021 - Aug 2021*
University of Waterloo: Institute of Quantum Computing *Waterloo, ON, Canada*
- Participated in USEQIP to study multiple aspects of experimental quantum computing
- Created and collaborated in quantum algorithm coding projects

Teaching Assistant *Jan 2020 - Present*
Trinity College *Hartford, CT, USA*
Assisted in management of courses, conducted labs, graded assignments, and presented supplementary lectures.
- ENGR 110 : Engineering and Analysis
- ENGR 120 : Introduction to Engineering Design
- ENGR 212 : Linear Circuit Theory
- PHYS 231 : Physics II: Electricity, Magnetism and Waves
- PHYS 141 : Physics I: Mechanics
- CPSC 203 : Mathematical Foundation of Computing

Research Projects

Semiconductor Device Modeling *May 2019 - Aug 2019*
Trinity College Department of Engineering *Hartford, CT, USA*
- Simulated and evaluated characteristics of MOSFET and FIBMOS with varying channel properties using COMSOL.
- Presented the paper at COMSOL Multiphysics Conference 2019, Boston, MA.

Vision-based force-feedback in RMIS *Jan 2020 - Mar 2020*
Trinity College Department of Engineering *Hartford, CT, USA*
- Examined the performance of haptic feedback in Robot-Assisted Minimally Invasive Surgery using simulated tissue.
- Developed mathematical models for node-to-node interaction within mesh used for modeling tissue surfaces.
- Implemented statistical models to analyze user study data to produce meaningful illustrations using R.

Vibration-based Contact Sensing *May 2020 - Sept 2021*
Trinity College Department of Engineering *Hartford, CT, USA*
- Designed and built vibration-based contact sensor using accelerometer with C.
- Implemented signal processing and convolutional neural network using MATLAB and Python to classify contact location.

Haptic Interface for Robot Locomotion *Sep 2020 - Dec 2020*
Trinity College Department of Engineering *Hartford, CT, USA*
- Developed haptic telelocomotion interface with a hexapedal robot using Python and Chai3D.
- Implemented gait trajectory using haptic device configuration and generate appropriate force feedback.

Hardware and Software Projects

FermiLT Designed and maintained circuit element optimizer for Fermilab Python/SPICE
QHO Simulator Designed a simulator to estimate time evolution of a given quantum wave function. MATLAB
Autonomous Vehicle Designed and established wireless communication to interface with autonomous vehicle. Arduino/Tegra
Cubetastic Built 3D collision-based obstacle avoidance game for Android and Windows. Unity/C#
Text Editor Implemented Search Tree to build a text editor with text prediction. Java
Project Map Built global air traffic map by implementing various data structures. Java

Skills & Certification

Programming Python, MATLAB, Qiskit, C, C++, R, Mathematica, Java
Technologies SPICE, COMSOL, Git, ROS, LaTeX, RStudio, Unity3D, Jupyter
MOOCs Data Science Professional Certificate (HarvardX), Data Structures and Performance (UC Santa Clara)
Languages Nepalese, Hindi

Leadership & Activities

President Trinity College IEEE Student Chapter *Jan 2020 - May 2021*
Treasurer Trinity College SPS Chapter *Sep 2019 - Present*

Publications

[1] **D. Subedi** and D. A. Fixel, "MOSFET Channel Engineering and Scaling Study using COMSOL Multiphysics Simulation Software", *COMSOL Multiphysics Conference 2019*, Boston, MA, 2019.

[2] K. Huang, D. Chitrakar, R.Mitra, **D.Subedi**, and Y. Su, "Characterizing Limits of Vision-Based Force Feedback in Simulated Surgical Tool-Tissue Interaction", *2020 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Montreal, Canada, 2020.

[3] R. Mitra, K. Boyd, **D. Subedi**, D. Chitrakar, E. Aldrich, A. Swamy, and K. Huang, "Contact Sensing via Active Oscillatory Actuation", *2020 IEEE International Conference on Mechatronics, Robotics and Automation (ICMRA)*, Shanghai, China, 2020.

[4] K. Huang, **D. Subedi**, R. Mitra, I. Yung, K. Boyd, E. Aldrich, and D. Chitrakar, "Telelocomotion—Remotely Operated Legged Robots", *Applied Sciences 2021*, vol. 11, no. 1:194.

[5] **D. Subedi**, E. Schoemer, D. Chitrakar, Y. Su and K. Huang, "Contact Location via Active Oscillatory Actuation", *2022 IEEE/SICE International Symposium on System Integration (SII)*, Narvik, Norway, 2022.