Japnit Singh Sethi, E.I.T.

japsethi | japsethi | JapSethi | japss96@vt.edu | 540-998-4647

EDUCATION

Master of Science in Computer Engineering **May 2021**
Focus Area: Software, Controls and Machine Intelligence
Virginia Polytechnic Institute and State University *Blacksburg, VA*

Bachelor of Science in Mechanical Engineering **May 2019**
Virginia Polytechnic Institute and State University *Blacksburg, VA*

TECHNICAL SKILLS

- **Programming Languages**: C/C++, MATLAB, Python, LaTeX
- **Softwares**: ROS, SolidWorks, Siemens NX, ANSYS, KiCad
- **Version Control**: Git

EXPERIENCE

Autonomous Systems and Controls Lab **Blacksburg, VA**
Graduate Research Assistant *July 2019 - Present*
- Planning to implement **advanced autopilot control design** for AUV using **C++** and ROS
- Updated 3D CAD models in **SolidWorks** for fins and encasing of servo motors and battery
- Operated AUV in **Linux** Kernel using ROS commands
- Conducted actuator, fins, and **AHRS** (attitude and heading reference system) calibration of the AUV

Assistive Robotics Lab **Blacksburg, VA**
Undergraduate Researcher *May 2018 - August 2018*
- Created 3D CAD models of **15 components** of Exo-Suit for Soft goods and Upper frame in **Siemens NX**
- **Machined** over **20 components** of Exo-Suit using sheet metal bender, cutter, and punch hole
- Constructed **8** tube bending **prototypes** for 3 subjects to support objectives of comfort and strength

VVF LLC **Kansas City, KS**
Engineering Intern *May 2016 - August 2016*
- Inspected electrical problems in the Deodrant manufacturing area to keep the line running at **95% capacity**
- **Improved** soap packaging **efficiency** by **18.5%** by troubleshooting problems with the billet diverter, press, cartoner, and the bander
- Completed **directional flow analysis** of **15** pumps in the Reactor, Rail yard and Pump House areas

PROJECTS

Autonomous Underwater Vehicle *September 2019 - November 2019*
- Designed a linear state-feedback controller using **pole placement** techniques for the Pitch- Axis Model
- Designed a optimal linear state-feedback controller using linear quadratic regulator (**LQR**) techniques
- Designed a linear output-feedback controller using a luenberger **observer** state estimator

Inverted Pendulum on a Cart *November 2019 - December 2019*
- Constructed equations of motion for the Inverted Pendulum (2DOF) using **lagrange's equations**.
- Designed **Kalman Filter**, given gaussian white noise disturbances and measurement noise.
- Combined the optimal full-state feedback **LQR** with the optimal full-state estimator (LQE or Kalman Filter) to obtain the sensor-based **linear quadratic gaussian (LQG)** controller.

Semi-Autonomous Underground Vehicle *January 2019 - May 2019*
- Implemented 2D and 3D **SLAM** using the **Gmapping** and Rtabmap package respectively in **ROS**
- Generated **SICK LiDar** and **depth camera images** using sicktoolbox_wrapper and openni2 package in the **GUI**
- Controlled robot **actuators** using rosserial_Arduino package

RELEVANT COURSES

Applied Linear Systems	Non-Linear Control Theory	Advanced Machine Learning
Rapid Prototyping	Adaptive Controls	Experimental Robotics

LEADERSHIP, AWARDS AND CERTIFICATIONS

- International Undergraduate Speaker for Class of 2019
- **Certified SolidWorks Associate** *July 2019 - Present*
- Engineer in Training **Mechanical** # 0420072322 *July 2019 - Present*
- Resident Advisor(**Scholarship**), Virginia Tech *January 2017 - May 2019*
- First Year Orientation Leader, Virginia Tech *June 2017 - August 2017*