

# SONU DILEEP

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## EDUCATION

<b>PhD in Computer Science</b> Colorado State University, Fort Collins, CO	<b>Aug 2021 - Present</b>
<b>Master of Science in Computer Engineering</b> Colorado State University, Fort Collins, CO	<b>Aug 2018 - May 2021</b>
<b>Bachelor of Technology in Electronics and Communication Engineering</b> Amrita Vishwa Vidyapeetham, Amrita University, India	<b>July 2013 - May 2017</b>
<b>Relevant Coursework:</b> Machine Learning, Image Computation, Digital Image Processing, Optimization Methods, Big Data, Natural Language Processing, Computer Graphics, Robotic Programming, Modeling of Large Dataset, Software Engineering	

## SKILLS

**Technical Skills:** Deep Learning, 2D/3D Object Detection & Tracking, Segmentation, Feature Detection, 3D Reconstruction, Structure from Motion, SLAM, GANs  
**Programming Language:** Python, C++, MATLAB  
**Libraries:** OpenCV, ROS, PyTorch, TensorFlow, NumPy, SciPy, Scikit-learn, Pandas, Matplotlib, Apache Spark, Hadoop  
**Other Skills:** Arduino, Raspberry Pi, PyQt, QGIS, RVIZ, Git, SVN, Unreal Engine  
**Professional Skills:** Communication, Creativity, Critical Thinking, Problem Solving, Team Player

## PROFESSIONAL EXPERIENCE

<b>Graduate Researcher - Computer Vision, Chevron, CO</b> <u>Computer Vision based oil and gas site monitoring system</u> <ul style="list-style-type: none"><li>- Developed a Transformer based model to monitor the state of flare at oil and gas sites</li><li>- Worked on data cleaning and annotation for training neural networks</li><li>- Created a synthetic database using Unreal Engine which could emulate different flare conditions and weather</li><li>- Find the Ringelmann number of smoke coming out of flare</li><li>- Trained a Swin Transformer model to identify the state of flare, achieved 96% accuracy on test set</li></ul>	<b>08/2021 - Present</b>
<b>Graduate Researcher - Data Analysis, CSU Energy Institute, CO</b> <u>Simulation model for methane and other hydrocarbons from oil and gas facilities</u> <ul style="list-style-type: none"><li>- Worked on developing code for estimating emissions from oil and gas sites using Monte Carlo simulation</li><li>- Collected and Analyzed data from multiple sources for modeling each facility</li><li>- Create input sheets for model, run simulation and validate results</li></ul>	<b>08/2020 - Present</b>
<b>Graduate Researcher - Computer Vision, CSU Energy Institute, CO</b> <u>Computer Vision for automated identification of well pad features from satellite imagery</u> <ul style="list-style-type: none"><li>- Developed an automated well pad and equipment detection model using CNNs for methane emission studies</li><li>- Developed a python-based plugin for easy annotation of google satellite imagery using PyQt and QGIS</li><li>- Worked on data cleaning and annotation</li><li>- Trained a YoloV4 and achieved an average accuracy of 97% in DJ Basin, Colorado</li></ul>	<b>01/2020 - 05/2021</b>
<b>Mapping Researcher Intern - Autonomous Driving, Magna International, MI</b> <u>Mapping and Localization of Self-Driving Car</u> <ul style="list-style-type: none"><li>- Worked on data annotation to train deep learning models for identifying moving objects</li><li>- Improved current feature detection algorithm used for mapping</li><li>- Modified one of the existing line detection algorithms for faster mapping and localization</li><li>- Modified current mapping algorithm to detect duplicate features based on camera pose</li></ul>	<b>05/2021 - 08/2021</b>
<b>Research Engineer - Humanitarian Technologies Lab, India</b> <u>Hand Gesture Based Wheelchair navigation and Autonomous Wheelchair Navigation</u> <ul style="list-style-type: none"><li>- Responsible for writing codes for wheelchair navigation using Hand Gestures</li><li>- Combined data from multiple sensors for safe navigation of wheelchair</li><li>- Worked in the development of project "Autonomous Wheelchair Navigation"</li></ul>	<b>05/2017 - 12/2017</b>