Jonathan Klingspon

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Computer scientist with research interests on the cutting edge of computer vision, focusing on multi-view semantics, 3D point data analysis, robotics integration, and full stack camera systems development.

EDUCATION

UC SAN DIEGO

BS in Math - Computer Science
August 2019 - June 2022
San Diego, CA
Provost Honors {WI21, SP21}
Completed in 3 years

COURSEWORK

Enumerative Combinatorics
Applied Linear Algebra
Theory of Computation
Numerical Optimization - Linear and Nonlinear Programming
Advanced Data Structures
Modern Algebra
Design and Analysis of Algorithms
Systems Programming

SKILLS

TECHNICAL

C/C++ • Python • MATLAB
Sensor Fusion • React • Java • Shell
Linux Kernel • Docker • Networking Systems • Machine Vision
Cluster Operations • UNIX • ISP
Web Development • Automation
Familiar:
ROS • Xilinx •Nvidia Jetson Stack
SOLIDWORKS

TANGIBLE

Microcontrollers • Electronics
Automated UAV Deployment •
Photogrammetry • 3D Printing
LiDAR

LANGUAGE

English – Native
German – Proficient
Russian – Basic
Japanese – Basic

PUBLICATIONS

2020 – Meyer, Klingspon, Lo, Netchaev, Ellison, Kuester • TunnelCAM- A HDR Spherical Camera Array for Structural Integrity Assessments of Dam Interiors *Society for Imaging Science and Technology*

EXPERIENCE

LOOQ AI | Principal Systems Engineer

April 2022 - Present

- Joined the company from its initial foundation, developing units from prototype to production bringing the company to $1 million in annual revenue.
- Planned and developed full camera system capture software, facilitating synchronous realtime high-throughput camera, GPS, and INS data capture with sensor fusion, with on-device computer vision AI stack to ensure capture quality.
- Designed and implemented initial versions of intuitive and user-friendly system capture software and cloud-based visualization interfaces.
- Successfully deployed and remotely coordinated deployments and debugging of prototype vehicle-mounted and handheld camera systems for client data capture.
- Implemented custom proprietary archiving file format for captured device data, meeting vital requirements for data integrity, security, and storage speed.
- Automated data preparation and processing pipelines for image and GPS data
- Facilitated firmware-level bringup and implemented firmware build automation and production device provisioning stack for custom Jetson-based carrier PCBs.

UCSD DRONELAB / CULTURAL HERITAGE ENGINEERING INITIATIVE (CHEI) | Undergraduate Research Assistant

June 2019 – April 2022 | San Diego, CA

- Assisted in the development and deployment of specialized and general camera systems for 3D point data capture.
- Conducted field deployments for data acquisition with handheld and robotic (aerial and ground-based) camera-based and LiDAR payloads.
- Worked through full stack of camera systems development, implementing hardware and compute pipelines
- Automated processing and analysis pipelines for data assets. Implemented scalable methods for data rectification, reconstruction, and analytics.

RESEARCH PROJECTS

TUNNELCAM

August 2019 – Present

Collaboration with US Army Corps of Engineering to develop a remote camera-based survey system for safe inspection of Dam infrastructure. Assembled prototype spherical camera array. Developed system control software. Deployed system in challenging environments. Automated pipelines to report structural anomalies.

ONR WAVE RECONSTRUCTION

May 2021 – Present

Project to evaluate the feasibility of sea-surface imaging via wide-baseline trinocular multiview imaging. Implemented calibration methods and depth algorithms to generate accurate depth maps from captured image sets. Currently evaluating potential to quantify wave conditions and speed over a temporal domain.

TRIPANO CAMERA

May 2021 – July 2021

Development of a RTK GPS-referenced trinocular panoramic camera system for spherical 3D capture. Built multi-node distributed capture stack for Nvidia platforms.

4D IMAGING FOR STRUCTURAL HEALTH MONITORING

December 2019 – March 2022

Evaluation of potential for structural health assessment and construction site monitoring via daily aerial data captures. Constructed pipeline for full automation of daily drone flights, data uploads, image processing, and model reconstruction.