

Junhan Hu

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EXPERIENCE

Senior Software Algorithm Engineer

July 2022 — Present

OmniVision Technologies, Inc.

Santa Clara, CA

- Develop and maintain multiple ISP blocks; standardize objective image-quality metrics and evaluations across sensors and releases.
- **Highlight reconstruction & HDR:** developed algorithms across multiple ISP pipelines and sensor architectures, recovering color and detail in clipped regions via color-space conversion, for both single- and 4-exposure HDR scenes.
- **RAW-domain denoise:** developed and improved DNLM-based RAW denoise for native Bayer processing, including 4-pipe parallel tiled processing with bit-exact output; currently architecting RAW denoise for next-gen 4C Quad Bayer sensors.
- **Hardware cost optimization:** drove multiple denoise cost-down initiatives — reduced gate count ~20% across RAW and UV denoise stages; led cross-stage denoise architecture trade-off studies enabling silicon-area savings.

Robotics Engineer Intern

July 2021 — July 2022

Darkblue Technology, Inc.

Remote

- Developed computer-vision and control components for an agricultural robot and built an integrated Gazebo simulation to accelerate iteration.
- Built the robot kinematic model using the D-H method and integrated it with control and perception.
- Replaced RRT with BIT* for motion planning, producing shorter paths with fewer nodes in field-like simulations.
- Implemented software camera sync (~0.1 s latency between two cameras) and deployed a detector reaching ~98% accuracy at ~10 FPS on an edge camera.
- Integrated model, control, data transfer, and perception into a vision-servo simulation, reducing on-field iteration time by ~80%.

Computer Vision Intern

May 2021 — July 2021

Midea Group

Shanghai, China

- Built a virtual camera with OpenCV and Open3D to texture 3D point clouds and synthesize training data.
- Developed a portable Qt-based visualizer running at ~100 FPS on commodity hardware.

PROJECTS

VLA ISP Probe (github.com/hujunhan/vla-isp-probe)

2026

- Built a RAW sensor + ISP simulator into closed-loop evaluation of OpenVLA-OFT, a 7B vision-language-action policy.
- Showed that un-tuned ISP denoise at high gain cuts task success by up to 16 points, while gain-tuned denoise restores it to within ~1 point of a clean camera.
- At stress-level noise, RAW + ISP output cut success to 21–49%, while Gaussian noise at equal PSNR left it at 97%+.

ISO12233 Chart Generator (github.com/hujunhan/ISO12233)

2026

- Built high-resolution ISO 12233, CIPA, e-SFR and s-SFR chart generators.
- Exports SVG charts and linear-reflectance arrays for detail and MTF tests in ISP simulation.

EDUCATION

Georgia Institute of Technology

Atlanta, GA

M.S. in Electrical and Computer Engineering

Aug 2020 — May 2022

Zhejiang University

Hangzhou, China

B.Eng. in Control Science and Engineering

Sep 2016 — June 2020

TECHNICAL SKILLS

- **Signal Processing:** Image Signal Processing, Image Quality, Computer Vision, Deep Learning, Machine Learning, Convex Optimization, HDR Combine, Denoise, Tone Mapping
- **Programming:** Linux, Python, C/C++, Real-time Systems, Git, Docker, CI/CD, OpenCV, Open3D, Qt
- **Robotics:** Kinematics, Modeling, Control Theory, Motion Planning, SLAM, Gazebo, Simulation, ROS/ROS2