

Gines Hidalgo

RESEARCH ASSOCIATE

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Summary

Expert in computationally efficient **human pose estimation, deep learning, and computer vision**. Lead author of **OpenPose** (11,000+ stars in GitHub). 5+ years of experience in **performance-oriented C++** software development, including CUDA, AVX vectorization, multi-threading, embedded system programming, and Qt/GUI deployment. **Mentored multiple students in research and software development**, culminating in their contribution to OpenPose. Proven expertise in translating research projects into successful open-source libraries.

Education

The Robotics Institute, Carnegie Mellon University (CMU)

Pittsburgh, PA

M.S. IN ROBOTICS

Aug. 2016 - Exp. May. 2019

- Specialized courses: Geometry-Based Methods in Vision; Convex Optimization; Parallel Computer Architecture and Programming; Computer Vision; Machine Learning; Visual Learning & Recognition; Kinematics, Dynamics and Control.
- Current GPA: 4.13 / 4.33.

Universidad Politécnica de Cartagena (UPCT)

Cartagena, Spain

B.S. IN TELECOMMUNICATION SYSTEM ENGINEERING

Sep. 2010 - Jul. 2014

- Fellow in Erasmus Exchange Program at **FH St. Pölten University of Applied Sciences**, St. Pölten, Austria.
- **Awarded** Telecommunication Systems Engineering Extraordinary Award.
- Rank 1, GPA: 9.09 / 10.00.

Work Experience

Perceptual Computing Lab at CMU

Pittsburgh, PA

RESEARCH ASSOCIATE UNDER **PROF. YASER SHEIKH**

Dec. 2016 - PRESENT

- **Lead author and main developer of OpenPose**, the first real-time system to jointly detect whole-body keypoints (body, hand, face, and foot).
- **Panoptic Studio collaborator** (520-camera system): **dataset generation, camera calibration**, 3D reconstruction, data bootstrapping.
- **Involved in grant and collaboration projects** involving Ford Motor Company and Intelligence Advanced Research Projects Activity (IARPA).
- **Advised several students** in research and software development involved in the OpenPose project.

Human Sensing Laboratory at CMU

Pittsburgh, PA

RESEARCH ASSOCIATE UNDER **PROF. FERNANDO DE LA TORRE**

Sep. 2014 - Dec. 2016

- Developed and maintained the multi-threaded C++ GUI of **IntraFace** (facial tracking library) and the **FeelingSpector** (emotion detector).
- Implemented **face swapping software** in C++ with the Vulkan graphics API.
- Developed **camera calibration** toolbox for cameras with **non-overlapping field-of-view** and later driver's gaze projection into the road view.
- Implemented **age estimation algorithm** from facial keypoints, SIFT features, and SVM classifier.
- Developed C++ computer vision software on **embedded systems** (Nvidia TK1).

Electronics, Computer Technology, and Projects Department at UPCT

Cartagena, Spain

STUDENT INTERN UNDER **PROF. JAVIER TOLEDO**

Oct. 2012 - Jun. 2013

- Developed a **stereoscopic rectification** algorithm for 2-view parallel camera configuration that balances the rotation and height of the 2 views.

Publications and Conferences

OpenPose: Realtime Multi-Person 2D Pose Estimation using Part Affinity Fields

arXiv - Dec. 2018

ZHE CAO, **GINES HIDALGO**, TOMAS SIMON, SHIH-EN WEI, YASER SHEIKH

PDF | arXiv | OpenPose | Foot Dataset

Efficient Online Multi-Person 2D Pose Tracking with Recurrent Spatio-Temporal Affinity Fields

arXiv - Nov. 2018

YAADHAV RAAJ, HAROON IDREES, **GINES HIDALGO**, YASER SHEIKH

PDF | arXiv

OpenPose: A Real-Time Multi-Person Keypoint Detection Library

CVPR 2017 (demo)

GINES HIDALGO, ZHE CAO, TOMAS SIMON, SHIH-EN WEI, HANBYUL JOO, YASER SHEIKH

OpenPose

Teaching Experience

Mentorship

PERCEPTUAL COMPUTING LAB AT CMU

Pittsburgh, PA

Dec. 2016 - PRESENT

- Personally **interviewed and selected multiple candidates** out of more than 30 applicants to contribute to OpenPose.
- **Guided and mentored** those students to help improve OpenPose.
- OpenPose-based mentored projects: **multi-person tracking**; **Unity Plugin**; **Python binding**; CPU, OpenCL, and Mac versions; CMake installer.

Teaching Assistant

MS-RT Fundamentals of Robotics II, CMU. TAUGHT BY **PROF. MEL SIEGEL**

Pittsburgh, PA

Fall 2015

Recognition and Memberships

Press Coverage

IEEE SPECTRUM, REUTERS, WIRED, ZDNET, AMONG OTHERS. COMPLETE LIST IN GINESHIDALGO.COM.

Pittsburgh, PA

Admissions Committee Member

M.S. COMPUTER VISION (MSCV) AT CMU

Pittsburgh, PA

Fall 2017

Skills

Programming (proficient) C++, MATLAB, Python, CUDA.

Programming (familiar) AVX (C++) vectorization, C#, Java, Android, SQL, HTML5, CSS, Javascript, VHDL, Assembly, QML.

Tools (proficient) Caffe, OpenCV, Eigen, GCC/G++, MSVC, Qt Project, GitHub, NSIS (Install System), \LaTeX .

Tools (familiar) Tensorflow, Torch, cuDNN, Vulkan, Boost, LibCurl, Crypto++, Sockets, Unity.

Languages English, Spanish.

Extracurricular Activity

2018 **Grand Award Judge**, Intel International Science and Engineering Fair (ISEF)

Pittsburgh, PA

2018 **Science Fair Judge: Senior C.S. and Math**, Covestro Pittsburgh Regional Science and Engineering Fair

Pittsburgh, PA

2017 **Science Fair Judge: Intermediate Physics**, Covestro Pittsburgh Regional Science and Engineering Fair

Pittsburgh, PA

2018 **Pen Pal Volunteer**, Letters to a Pre-Scientist

Pittsburgh, PA