Yu Du

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EDUCATION

ZHEJIANG UNIVERSITY
Ph.D. in Computer Science
State Key Lab of CAD&CG
2011 - Present | Hangzhou, China
Expected to graduate in Mar 2017

EAST CHINA UNIVERSITY OF SCI AND TECH
B.S. in Computer Science
2007 - 2011 | Shanghai, China
Cum. GPA: 3.6 / 4.0
Major GPA: 3.8 / 4.0
Ranking: 1st/252

SKILLS

Programming
Over 100k lines:
C/C++ • Python
Under 100k lines:
Matlab • C# • Java • Javascript

Machine Learning
Convolutional Neural Networks
Recurrent Neural Networks
Classical (K-means, PCA, SVM, etc.)
MxNet • Caffe • OpenCV

Vision & Graphics
3D Human Pose Estimation
3D Skeleton Animation
Surveillance Video Analysis
Semantic Image Segmentation
Face Detection

Sensors
Signal processing and analysis of accelerometer, magnetic sensor and gyroscope

Platforms
Linux • Windows • Android (NDK)

Tools
Git • CMake • Docker • CUDA
Google Test • Boost • VIM

PATENTS

Human Pose Estimation:
CN105631861A

Gesture Recognition:
CN105608432A
CN105654037A
CN105426842A
CN105446484A

EXPERIENCE

NATIONAL UNIVERSITY OF SINGAPORE | Intern
Jun 2014 - Sep 2014 | Singapore

- Solely developed a video synopsis system which condenses days of surveillance video into a short summary video.
- Improved the quality and optimized the storage of foreground extraction.
- Homepage: sesame.comp.nus.edu.sg/project/application#369
- Newspaper: www.todayonline.com/print/1250166

PROJECTS

MOTION CAPTURE WITH MONOCULAR CAM | Lead Developer
Oct 2015 - Apr 2016 | Zhejiang University & National University of Singapore

- Solely developed a system that accurately estimates 3D full-body human poses from monocular RGB images.

GESTURE RECOGNITION WITH SEMG | Lead Developer
Nov 2014 - Present | Zhejiang University

- Led the development of a real-time gesture recognition system based on surface electromyography, which recognizes 8 finger gestures and 30 hand gestures of Chinese sign language with an accuracy of 99%.
- Implemented Locally-Connected Layer in MxNet and Caffe with cuBLAS.
- Contributed 5 Pull Requests to MxNet, a deep learning framework: 4 bugfixes (PR 2366, etc.) and a Deep Residual Network example (PR 2046).

CONTEXT-AWARENESS ON MOBILE PHONE | Lead Developer
Mar 2013 - Jun 2014 | Zhejiang University & Huawei Technologies Co. Ltd

- Led the development of a context-awareness system on mobile phone with front camera, accelerometer, magnetic sensor and gyroscope.
- Optimized the part-base model on mobile phone to detect face and estimate face pose in real-time.
- Improved the recognition accuracy of walking, running and falling down to 95% with hierarchical classification.

ACTION RECOGNITION WITH SENSORS | Lead Developer
Sep 2011 - Jun 2016 | Zhejiang University

- Led the development of a real-time motion capture and action recognition system with wearable accelerometer, magnetic sensor and gyroscope.

AWARDS

2009, 2010	Two silver medals of ACM/ICPC Asia regional
2010	2nd prize of China Undergraduate Mathematical Contest in Modeling
2009 - 2011	First-class scholarships of three years
2010	Scholarship of Shanghai Chemical Industry Park
2011	Outstanding B.S. Thesis

PUBLICATIONS

[1] Du, Y. *et al.* Marker-less 3D human motion capture with monocular image sequence and height-maps. *ECCV* (2016).

[2] Geng, W., Du, Y. *et al.* Gesture recognition by instantaneous surface EMG images. *Nature Scientific Reports* (2016).

[3] Du, Y. *et al.* High Accuracy Gesture Recognition Based on Instantaneous High-density Surface EMG Signals by Deep Convolutional Networks. *SIGCHI 2017* (under review).

[4] Du, Y. *et al.* CapgMyo: a high density surface electromyography database for gesture recognition. *Nature Scientific Data* (under review).