

Haidong Wang

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Education

Beihang University

M. Eng. in Information and Communication Engineering

Beijing, China

Sept. 2016 - Present

- GPA: 87.36/100
- Research Topic: Indoor Positioning
- Relevant Courses: Matrix Theory, Digital Signal Processing, Satellite Navigation, Algorithm Design and Analysis, Detection Estimation and Modulation Theory, Advanced Integrated Navigation Technology

Beihang University

B. Eng. in Electronic and Information Engineering

Beijing, China

Sept. 2012 - Jul. 2016

- GPA: 87.71/100
- Relevant Courses: Signals and Systems, Digital Signal Processing, Principles of Communication, The Foundation of Information Theory, Stochastic Process Theory, The Principles of Automatic Control, Image Signal Processing, Microcomputer Principle and Application, Network Security – Technology and Practice

Research

Communication, Navigation and Test Laboratory, Beihang University

Research Assistant

Beijing, China

Dec. 2015 - Present

- Designed an indoor pedestrian dead reckoning (PDR) algorithm and reduced 3σ positioning error of 10-lap walking by 70%. Relevant paper under minor revision.
- Implemented and optimized a positioning algorithm based on integration of GPS/DTMB/FM signal and reduced 3σ positioning error by 68% comparing to GPS alone. Relevant paper in preparation.
- Designed an indoor positioning algorithm based on WiFi/FM fingerprint fusion and improved average positioning accuracy by at least 15% comparing to either alone.
- Developed an Android PDR app. Positioning error kept within 4 meters in 5-minute walk.
- Guided an international student in English for one year on indoor positioning algorithm integrating PDR and WiFi fingerprint positioning. Already finished implementation of PDR and WiFi positioning either alone.

Publications

Haidong Wang, Li Cong and Honglei Qin, A Real-time Pedestrian Dead Reckoning System with FM-aided Motion Mode Recognition, *IEEE Sensors Journal*, 2018. (Under minor revision)

- Achieved classification accuracy of 88.0% and 98.1% respectively for turning and straight-line moving moments with random forest classifier using data from FM receiver and inertial sensors on a smartphone.
- Extracted straight-line headings with better precision and stability than traditional methods from magnetic measurements filtered by a selection scheme.
- Tested the algorithm at three sites and got 3σ positioning error improvement by at most 70%.

Li Cong, Haidong Wang and Honglei Qin, An Environmentally Adaptive Positioning Method Based on Integration of GPS/DTMB/FM, 2018. (In preparation)

- Utilized DTMB signal to enhance GPS positioning, and employed FM fingerprint positioning to fix positioning results of GPS.
- Devised an adaptive mode selection method using fuzzy inference system to determine the optimal integration mode of GPS, DTMB and FM in different positioning environment.
- Reduced 3σ positioning error by 68% compared to GPS alone.

Projects

SignatureAuth Project

Beijing, China

Team Leader

Mar. 2015 - May 2015

- Built an identity authentication system based on motion classification of the signing pens using support vector machine.
- Second Prize, "Feng Ru Cup" Competition of Academic and Technological Works of Beihang University, 2015.
- My contribution: individually completed wavelet feature extraction, MATLAB GUI implementation and software debugging, participated in design of algorithm flow.

Design of a Digital Frequency Meter

Beijing, China

Team Member

Aug. 2015

- Designed and implemented a digital frequency meter with LCD display and ability to measure frequency, period, interval and duty cycle.
- Second Prize, National Undergraduate Electronic Design Contest (Beijing Division), 2015.
- My contribution: individually implemented display control with ARM board, participated in system design and implementation of communication between ARM and FPGA.

Digital Image Processing

Beijing, China

Course Project

Jun. 2015

- Implemented with MATLAB image transformation, compression, restoration, segmentation, edge detection and feature extraction.

Simulation of a Digital Communication System

Beijing, China

Course Project

Jun. 2015

- Simulated a digital communication system with MATLAB and validated bit error rate curve.

Honors & Awards

- **Excellent Bachelor Thesis** (Top 1%), Beihang University, 2016
- **Second Prize** in National Undergraduate Electronic Design Contest, Beijing Division, 2015.
- **Second Prize** in "Feng Ru Cup" Competition of Academic and Technological Works, Beihang University, 2015.
- **Excellent Student**, Beihang University, 2013
- **First Prize** of Scholarship for Excellent Academic Performance, Beihang University, 2013

Skills

- **Programming:** Java, MATLAB, Python, C, C++, \LaTeX .
- **Tool:** MATLAB, Android Studio, Linux.
- **Language:** Chinese (Native), English (TOEFL: 103)