



1 Education Background

- **B.S in Geodesy and Geomatics**

School of Geodesy and Geomatics, Wuhan University (WHU), Wuhan, China 2016 - 2019

GPA: 3.76/4.0

Rank: 3/29

- **2017 & 2018**

Second Class Scholarship (Twice)

WHU

- **2017 & 2018**

Excellent Student Award (Twice)

WHU

2 Research Experience

10/2018 - 05/2019. Key Member. Inertial Navigation on Smartphone-based Platform, WHU

Advisor : Prof. DENG Fei

Objective: To Utilize MEMS of mobile phone to make an inertial navigation software and visualize movement trajectory of people. Installed MacOS system and Xcode, tested the adaptation between XCode and MacOS system.

- Learned Objective-C language, programmed and read the inertial data of MEMS.
- Extracted the original inertial data program, fixed the original data of accelerometer and gyroscope with band-pass filter.
- Used zero-velocity-detection algorithm and pedestrian-based algorithm to calculate single step length.
- Merged step length and orientation to visualize the track of smartphone.
- This project is still in progress and I will realize the algorithm on Android platform.

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03/2018 - 06/2019. Leader. National Students' Platform for Innovation and Entrepreneurship Training Program, WHU

Advisor : Prof. YAO Yibin, Prof. HUA Xianghong

Topic: A Commercial Building Fire Evacuation System Based on an Indoor Path Planning Algorithm and ZigBee Platform.

Objective: To design an evacuation system that can provide an escape route for indoor fire through combining ZigBee Wireless Sensor Network.

- Vectorized the map of the interior of the targeted building by using the ArcGIS, adopted the program design of ZigBee to get the numbers of people of each room inside the building and whether the room was the origin of fire.
- Transferred the data to the computer program by wireless sensor network nodes and gorge line, extracted the data in the form of reading and writing files with C# program.
- Utilized the combined weight method based on AHP weight and entropy weight, calculated the escape order of each node in the room by using the existing data (**the application of mathematical modeling**).
- Applied the improved Dijkstra algorithm (**shortest path algorithm**) to calculate the optimal route, and transmitted the route to the switchboard node of wireless sensor network.
- Lighted up the light source node on demand by switchboard node, which made the light source display the escape direction of corresponding indoor node by depicting an arrow.



Achievement: 1. Adopted Dijkstra algorithm is finished. 2. The ZigBee wireless sensor network can be used for analysis on direction of personnel entry and exit.

Currently, I have finished one paper about the algorithm and is going to co-write a new paper about ZigBee.

Paper: Dong Haonan, Ye Xiaotong, Hao Congpu. Emergency Evacuation Path Planning Algorithm for Indoor Fire In Commercial Buildings.

3 Academic Competitions

01/2019: MCM/ICM Honorable Prize Leader, WHU

Topic: Evacuation Problem in Louvre.

- Analyzed prediction method and algorithm, and decided the theme.
- Read large numbers of papers to confirm the algorithm and model: an improved shortest path algorithm based on hierarchical analysis model.
- Used C# and Matlab to realize and solve the initial model.
- Improved the weight of Dijkstra algorithm to solve the dynamic problem of static algorithm

08/2019: China Undergraduate Mathematical Contest in Modeling

Third Prize of Hubei Province Key Member, WHU

Topic: Scheduling Problem of Intelligent RGV.

- Analyzed the estimated method and algorithm and determined the topic.
- Discussed with teammates and confirmed our solution which is Monte Carlo method based on stochastic scheduling.
- Used Matlab to program and realize solution of the initial model.
- Utilized SPSS software for statistical analysis of the results, and wrote the thesis.

4 Extracurricular Activities

03/2017 - 03/2019 Leader & Volunteer, Wanlin Art Museum, WHU

- Mainly responsible for promoting and planning, advertized the museum via platforms like Wechat and Weibo.
- Assigned tasks to students and coordinated teachers of the Museum; designed planning scheme of activities.
- Won the title of Social Activist and Excellent Volunteer respectively (TWICE)

09/2016 - 05/2017 Key Member, The Center of Innovation and Practice, WHU

- Designed forms and helped other students to solve affairs.
- Made hardware of media and displayed PPT.

5 Computational Skills

Language: C++, C#, Matlab, Python, Java, C

System: Window, MacOS, Ubuntu.