Jie Yuan

Email : yuanjielovejesus@gmail.com
https://penguinflys.github.io/penguinflys/about
Mobile : +49 15224073254
Address: Hannover, Germany

EDUCATION

Leibiniz University Hannover   Hanover, Germany
Master of Science in Navigation and Field Robotics (interdisciplinary); GPA: 3.3/4.0   *Oct. 2017 – Feb. 2021*

China University of Mining and Technology   Xuzhou, China
Bachelor of Engineering in geodesy and geoinformatics; GPA: 3.57/4.0 (6/157)   *Sept. 2013 – July. 2017*

EXPERIENCE

Institute of Photogrammetry and Geoinformation at Leibniz University   Hanover, Germany
Research Assitant (part-time)   *May. 2019 - Apr. 2020*

- **Research Paper Investigation**: Collection of papers on object detection and application on aerial images
- **Algorithm Development**: Development of object detection algorithms on aerial images

Rainbow Business Solution GmbH.   Hanover, Germany
Office Coordinator(part-time)   *Oct. 2018 - Jan. 2020*

- **Scheduling**: Appointments arrangement, Meeting organization, Conference Setup
- **Office Coordination**: Business operation by calling, answering and scheduling, files archive, fixing devices.
- **Interpretation and Translation**: Key points conveying between German and Chinese

Institute of Cartography and Geoinformatics at Leibniz University   Hanover, Germany
Labor Mentor (part-time)   *Apr. 2018 - Apr. 2019*

- **Labor Supervision**: Support for students on poles detection with point cloud data
- **Result Examination**: Evaluation the result of experiments and homework

Institute of Cartography and Geoinformatics at Lebiniz University   Hanover, Germany
GUI Programmer for HD Mapping system (part-time)   *Feb. 2018 - Sep. 2018*

- **GUI Design**: Design of multiple interfaces under tabs for different threads with Qt5 library
- **Multi Threading**: Configuration of front end and back-end process in multiple tabs
- **Sensor Data IO**: Automatic data transferring from sensors to HD mapping system
- **Scene Visualization**: Visualization of a fused 3D scene of point cloud and binocular camera
- **Algorithm Adaptation**: Adaptation of fresh research papers to the mapping system

Zhonghong Geodesy Technology Research Institute   Changzhou, China
surveyor(intern)   *Jan. 2017 - July. 2017*

- **Survey Plan Design**: Estimation of surveying accuracy and feasibility
- **Scheduling**: Time planing on each part of surveying task
- **Result Adjustment**: Adjustment of the GPS antenna collected data and technical report

PROJECTS

Digital Earth based on Web Map Service   Individual, 2017
Digital Earth; C++; Web Service; Tomcat; OpenGL; Pangolin; CMake   *Windows/Ubuntu*

- **Web Map Service(WMS)**: Broadcasting web map service of grid maps on a local server with Apache Tomcat
- **Client Application**: Prototype of a digital earth with function to download satellite images with user interface, written in C++ with GDAL library
- **Geographic Grid Technology**: Densification of Ikosaeder in different sampling resolutions

LEGO Courier Simulation   Team,2017-2018
Mobile Robot; Sensor Fusion; SLAM; Embedded System; C++; ROS; CMake; OpenCV   *Ubuntu*

- **Sensor & Motion Model**: Lidar/Ultrasonic Unit/Camera; Differential drive kinematics

- ○ **Calibration**: External Camera: Localization by Arena Square; Odometer: clockwise and counter-clockwise square and circle drive. Extrinsic parameters between sensors are ignored.
  - ○ **Localization**: Motion estimation with ICP on point cloud; global localization with camera; state optimized by kalman filtering.
  - ○ **Mapping**: 2 dimensional grid map with VoxelGrid filter
  - ○ **Path Planning**: A* algorithm with cost map
  - ○ **Control**: Iterative going and turning
- **Sensor Fusion based on Set-membership KF**   Team, 2018
  SMKF; Matlab   *Windows*
  - ○ **Uncertainty Model**: Ellipsoid space enclosed by Gaussian distribution.
  - ○ **Application**: Non-rigid body Tranformation
- **Dynamic Landmark based Visual Odometry**   Team, 2018
  SFM; VIO; SLAM; 3D Reconstruction; Matlab; Python   *Windows*
  - ○ **Keypoints and Descriptors**: Traditional Keypoints: SIFT,SURF,ORB,FREAK,BRISK,and an unknown deep learning keypoint.
  - ○ **Keypoints Matching**: RANSAC framework with epipolar constraint.
  - ○ **Motion Estimation**: Rigid body transformation with matching points
  - ○ **Sparse Map Reconstruction**: Keypoints reprejection to local coordinate system.
  - ○ **Performance Evaluation**: Accuracy and Efficiency in different scenes.
- **Object Tracking and Motion Prediction via KFs**   Individual, 2018
  Object tracking; Deep learning; Kalman Filtering; C++   *Ubuntu*
  - ○ **Object Extraction**: Camera: Deep learning bounding box; Lidar: RANSAC surface matching/Euclidean clustering and segmentation
  - ○ **Object Matching**: ID assignment: Matching bounding box with MAD/SAD/SSD/MSD/NCC; 3D bounding box with point cloud.
  - ○ **Motion Prediction**: Application of Unscented Kalman Filter(UKF) and Extented Kalman Filter(EKF) to predict motion of preceding cars.
- **Real-time Point Cloud Rectification with Multiple Lidars**   Team, 2019
  HD Mapping; ROS; C++; CMAKE   *Ubuntu*
  - ○ **Platform Calibration**: ICP transformation estimation in a closed geometric space configuration
  - ○ **Time Synchronization**: GPS Time synchronization consistent with Mobile Mapping System
  - ○ **Point Cloud Rectification**: GPS coordinate interpolation in the last time interval/Point cloud interpolation between recording time frames
- **PanUrban Dataset - A panoptic dataset in aerial imagery**   Individual,2020
  Benchmark; Python; OpenCV; Annotation Interface   *Ubuntu*
  - ○ **Semi-automatic Workflow**: Workflow from semantic dataset to instance dataset then to panoptic dataset
  - ○ **Annotation Format**: COCO style annotation format.
  - ○ **Full Range Augmentation**: Sampling annotation and source image from a large training patch.
- **Panoptic Segmentation in urban Area**   Individual, 2020-2021
  Object Detection; Semantic Segmentation; Instance segmentation *Ubuntu/Cloud Platform*
  - ○ **Rotational Object**: Rotational Bounding box better enclose buildings and cars
  - ○ **Multiple tasks**: Rotated Faster RCNN/ Rotated Mask-RCNN/ Rotated PanopticFPN
  - ○ **Evaluation**: AP on instance mask and bounding box, IoU and ACC on Semantic, PQ/RQ/SQ on panoptic level.

PROFESSIONAL CERTIFICATE

- **Sensor Fusion Engineer**   *Udacity Nanodegree*
- **Deep Reinforcement Learning Expert**   *Udacity Nanodegree*

SKILLS

- **Programming Languages**   *C++, Python, Matlab, Html, Markdown, etc.*
- **Tools**   *CMAKE, ROS, PCL, OpenCV, OpenGL, PCL, Eigen, g2o, ceres, Pytorch, Qt5, etc.*
- **Speaking Languages**   *English(C1), German(B2-C1), Chinese(C2).*