Jie Yuan
https://penguinflys.github.io/penguinflys/about
Email : yuanjielovejesus@gmail.com
Mobile : +49 15224073254

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

- **IPI in 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
- **IKG in 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
- **IKG in 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 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; localization 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**: Apply 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, etc.*
- **Tools** *CMAKE, ROS, PCL, OpenCV, OpenGL, Pytorch, MS Office, ArcGIS*
- **Speaking Languages** *English(C1), German(B2-C1), Chinese(C2).*