Haoze Chang

+86-199-7526-1196(we-chat) | hzchang@stu.hit.edu.cn | haozechaung@gmail.com

haozechang.github.io | HaozeChang |

Harbin Institute of Technology, School of Electronics and Information Engineering

Objective

I am a second-year postgraduate student from the School of Electronic and Information Engineering, Harbin Institute of Technology (HIT). My personal research interest includes 3D Computer Vision, Generative AI (GAN, diffusion model), and Semantic Communication(theme of thesis). My research topic now is indoor visual localization based on image semantic communication. I am seeking a challenging position in 3D-vision to leverage my expertise in deep learning, aiming to contribute to innovative projects and practical problem-solving in fields such as SLAM.

Education

- **Harbin Institute of Technology** *Sep. 2022 – Jun. 2025*
  Master in Electornic Engineering Harbin, China
  - Ranking: TOP 28%
  - Numerical Analysis 90/100 | Embedded Intelligent Computing 95/100 | Pattern Recognition Technology 87/100
  - Thesis:Indoor Visual Localization Based on Image Semantic Communication
- **Hangzhou Dianzi Unviersity** *Sep. 2018 – Jun. 2022*
  Bachelor in Communication Engineering Hangzhou, China
  - GPA: 4.16/5.00 (34/288) | Ranking: TOP 11% | CET-6: 558
  - Data Structures 4.4/5 | Common Physics 4.7/5 | Computer Composition Principle 4.1/5
  - Thesis:Single-Wavelength Passive Optical Networks Based on Duty Cycle Modulation

Patents and Publications

C=Conference, P=Patent, U=Under Review

[C.1] Liang, Y.,**Chang, H.**, Ma, L., Qin, D. (2023).**Optical Fiber Pavement Blind Guiding Method Based on Distributed Optical Fiber Vibration Sensing**. In *GLOBECOM 2023-2023 IEEE Global Communications Conference* (pp. 6481-6486). IEEE. (CCF-C, selected as **TOP-tier** conference by HIT)

[C.2] **Chang, H.**, Ma, L., Wang, X. (2024).**Deep Joint Source Channel Coding via Attention for Wireless Image Transmission.**. In *WISATS 2024-International Conference on Wireless and Satellite Systems* (selected as **A-tier** conference by HIT)

[U.1] **Chang, H.**, Ma, L., Qin, D. (2024). **Sensor Derived SNR Adaptive Attention Based Joint Source-Channel Coding Method for Wireless Image Transmission**. Manuscript submitted for publication in *IEEE Sensors Journal*.

[P.1] Ma Lin, Chang, H, et al. (2023). **A device, system and method for pedestrian positioning and yaw warning based on fiber optic vibration signal**. (Patent Application Acceptance)

[P.2] Ma Lin, Liang, Y, Chang, H, et al. (2023). **Blind person discrimination device, system and method based on distributed fiber optic sensing device**. (Patent Application Acceptance)

Projects

- **Intelligent guide system for the blind** *Sep. 2022 - Sep. 2023*
  Tools: MATLAB,Python
  - Modeling and analyzing the gait information of visually impaired users and normal users, manually designing user gait features such as stride length, step frequency, and signal duty cycle as advanced features.
  - Developing signal processing algorithms and pattern recognition algorithms, extracting user gait signals from the input signals and classifying users through manually designed features.
  - Publishing related research results in papers and patents.
- **Information Accessibility Service Platform and Intelligent Terminal** *Nov. 2022 - Sep. 2023*
  Tools: Java, Python
  - Deploying place recognition algorithms based on global descriptor image retrieval.
  - Developing an AR WeChat mini program based on the Google AR toolkit, optimizing its features for visually impaired users to enhance usability.
  - Conducting a series of information gathering efforts and completing field tests at the Beijing Braille Library.
- **UAV formation search in denial environments** *Sep. 2022 - Dec. 2023*
  Tools: Python, Pytorch, Hardware [ ]

- Developing a deep learning-based target search and classification algorithm, utilizing the underbelly camera for target image input.
- Deploying a lightweight ONNX model on the onboard computer of an UAV, capable of processing input image data at 15 FPS.
- Developing a frequency domain algorithm to classify whether an image is affected by motion blur, and integrating a deblurring algorithm.

- **Semantic communication system for 6G generation communication** *Sep. 2023 - Now*
  Tools: Python, Pytorch [GitHub]
  - Completing research on a semantic communication system based on a generative model auto-encoder, achieving performance surpassing existing solutions.
  - Completing the reproduction and improvement of an image compression framework based on deep learning.
  - Completing model compression and pruning using the TensorFlow Lite framework based on existing models, facilitating deployment on embedded devices.
- **Deep learning based homogeneous image matching** *Jun. 2024 - Now*
  Tools: Python, Pytorch
  - Developing an image matching algorithm for weakly textured regions based on optical flow prediction, and predicting the confidence of the estimated results.
  - Utilizing the joint distribution of Gaussian and Laplace distributions to estimate the error in optical flow prediction, deriving the upper bound of the loss function, and completing the code implementation.
  - Contribution to the writing of the monograph: "3D Real-Scene Visualization Indoor Positioning and Navigation Technology"

Honors and Awards

- **Second class Scholarship of Harbin Institute of Technology for 3 years** *2022-2025*
- **Silver prize in Heilongjiang region "Internet Plus" innovation competition** *2023*
- **Scholarship for three consecutive years (6 consecutive times with 40% coverage)** *2023*
- **Outstanding graduates of the year 2022** *2022*
- **Provincial third prize of 2020 National College Student Mathematics competition** *2020*
- **2020 Zhejiang University Students' Physics Competition school first prize** *2020*
- **2019 Excellent Student Cadre** *2019*

Skills

- **Programming Languages:** Python, C++, MATLAB
- **Data Science & Machine Learning:** Pytorch, Tensorflow, Tensorflow Lite, Pytorch lightning
- **DevOps & Version Control:** Git, Docker
- **Experience of using C++ programming language:** Familiar with object-oriented programming, STL generic programming, smart pointers, class templates, basic data structures, lambda expressions, etc.
- **Mathematical & DL Tools:** Basic knowledge of deep learning and computer vision. Experience in the use of mainstream framework PyTorch, PyTorch Lightning, TensorFlow.
- **Linux Tools & Technologies:** Basic knowledge of Linux operating systems, storage management, file system. Experience with kernel operations like docker.

Development Projects

- **Android positioning system demo** *Mar. 2020 - Sep. 2020*
  Tools: Java, Git
  - Developing Android-based applications, completing the Baidu map APK call and integration, completing user positioning, location marker placing functions.
  - Collaborate with the team on git-based version control of the project to ensure the cleanliness and robustness of the project code.
- **cuda-based lenet implementation** *Mar. 2024 - May. 2024*
  Tools: cpp, cuda
  - Completeing the implementation of cuda-based lenet layers, such as convolutional layer, pooling layer, etc.
  - Manually completing the process of mallocing and freeing cuda memory.

Activity Experience

- **Freshman Counselor Assistant** *Sep. 2021 - Opt. 2022*
  School of Communication Engineering/HDU
  - Responsible for assisting counselors in daily work and help new students adapt to campus life.
  - Private, customized career development guidance for incoming students.
- **Volunteer Experience** *Sep. 2018 - Opt. 2021*
  Volunteer Organization/HDU
  - Participated in multiple volunteer activities, including Hangzhou marathon, etc.