Yanhao Bai

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Professional Profile

An innovative cs-major undergraduate with an academic rigor spanning four countries, a solid coding skillset of Python, C++, JavaScript, and a knack for devising robust AI solutions through cooperative team dynamics. Able to leverage a heavy dose of deep learning with data analytics, and a healthy sense of exploration and collaboration. Aspire to contribute to the cutting edge of computer science research and application with an unyielding curiosity and a collaborative spirit.

Education

University of California Berkeley, US – One-Year Exchange Student at EECS@UCB — Ongoing since 08/2023

- Selected Courses (17 credits): CS61C Machine Structures, CS161 Computer Security, CS198-008 Linux, CS198-078 Blockchain, CS198-126 Deep Learning, CS198-750 Building Apps in Web/iOS

Dalian University of Technology, China – Bachelor of Computer Science and Technology — Ongoing since 08/2020

- Average Score: 91/100
- Major Courses: Data Structures and Algorithms, Computer Principle, Computer Architecture, Compiler, Operating System, Database System, Computer Network, Software Engineering
- Math Courses: Engineering Math, Probabilistic and Statistics, Complex Function, Discrete Math
- Circuit Courses: Digital Logic, Analog Electronic Circuit, Circuit Experiment, Electronic Innovation

University of Oxford, UK – One-Month Summer Programme Student at LMH@OXFORD — 07/2023 - 08/2023

- Selected Course (4 credits): AI & ML - Advanced Applications of Neural Network, Deep Learning
- Seminars: Deep Reinforcement Learning (@UCB), Machine Learning with Graphics (@Stanford)

Technical University of Munich, Germany – One-Semester Exchange Student at Informatik@TUM — 10/2022 - 02/2023

- Selected Course (5 credits): Techniques in AI
- Seminars: TUM Data Innovation Lab (@Amazon), TUM Robotics (@BMW), TUM Internet Lab

Projects

Beam Prediction Based on Multi-Modal Fusion I *Undergraduate Thesis* I *DUT, China* — Ongoing since 01/2023

Supervisor: Prof. Xuanheng Li, DUT Associate Professor of School of Information and Communication

- Worked directly under supervision of Prof. Xuanheng Li, to propose a novel and effective solution of proactive beamforming scheme that integrates multi-modal sensing and communication via Deep Residual Network (ResNet) and transformer; our network obtained real-world comprehensive environmental features on DeepSense6G Dataset, and achieved >97.55% Top-5 ACC for prediction.
- Designed, trained, evaluated, and tuned uni- and multi- modal RetNet and transformer using Python.
- Coded, tested, debugged, implemented MultipleWeatherTranslationGAN.py to enlarge rgb dataset.
- In-progress drafting to publish a top Journal for the project.

UAV Based ML Aided Integrated Sensing and Communication I *Research Project* I *DUT, China* — 12/2021 - 12/2022

Supervisor: Prof. Xuanheng Li, DUT Associate Professor of School of Information and Communication

- Worked directly under supervision of Prof. Xuanheng Li, to develop a powerful and integrated ISAC platform (Communication: OFDM, Radar: FMCW) on the portable Pluto-SDR (SW Defined Radio); then utilized it as the platform for our proposed DQLearning-Framed Intelligent Drone Deployment.
- Ended up with a patent and awarded as National-Level in Nationwide College Innovation Program.

Air-Ground Coordinated Autonomous Aerial Inspection Robot I *Research Project* I *DUT, China* — 07/2022 - 09/2022

Supervisor: Prof. Heng Qi, DUT Dean Assistant for Faculty of Electronic Information and Electrical Engineering

- Worked directly under supervision of professor to successfully build up an aerial inspection robot ended up uploading ground infrastructure's fault images to protect workers from potential danger.
- Programmed Inspection Path Planning in high-dimen constraint space, using C++, via RRT* algorithm.
- Programmed Intelligent Perception Obstacle Avoidance and Trajectory Prediction using Py, via NNs.
- Programmed Power Target Monitoring and Early Warning using C++, via YOLO5.

AI-Driven Medical Image Processing I *Research Project* I *DUT, China* 03/2021 - 07/2021

Supervisor: Prof. Hongkai Wang, DUT Associate Dean of Faculty of Medicine, Professor of School of Biomedical Engineering

- Worked directly under supervision of Prof. Hongkai Wang, to research on manual image processing for trachea image segmentation, utilizing MITK Software; then designed, trained, evaluated, tuned a well-programmed nnUNet to successfully realize trachea image segmentation without manual op to end up with 3D-printed physical models of segmented trachea deriving from our nnUNet.

Skills and Tools

- C, C++, Java, Python, JavaScript, Verilog HDL (logisim)
- Git, VSCode, Jmeter, Testbed, Loadrunner
- CGAL, OpenMesh, VTK, ECharts
- PyCharm, PyTorch, TensorFlow
- HTML, D3.js, Tableau, NoSQL data stores (MongoDB)
- MySQL, Big Table, MapReduce, Mahout, Hadoop

Experience

Baidu Apollo Autonomous Driving Project at Institute of Software Chinese Academy of Sciences (ISCAS) **Beijing, China**

Summer Intern 06/2023 - 07/2023

Supervisor: Dr. Lingzhong Meng, ISCAS Researcher

- Worked closely with various teams at Integration Center, ISCAS, to propose a comprehensive solution for Baidu Apollo Autonomous Driving Project, linking functionalities of bottom layers, software usage, and date learning, etc., to connect the entire autonomous driving workflow.
- Coded, tested, debugged, implemented and documented the two modules using C++ and Python.
- Utilized Protobuf for HDMap Module, to read high-precision maps in Opendrive format, build up KDTree storing map data, implement the functionality of finding the road and subsequent nodes based on the entered starting point coordinates; lastly visualizing results via PCL, Qt, Vtk, OpenCV.
- Utilized Apollo's built-in tools of Dreamview (Apollo6.0) and OSM (Apollo3.0) for Routing Module, to successfully implement such two methods of visualizing the system's expected routing functions.

AI-driven Legal Supervision System for Protection of Minors at Local People's Procuratorate **Dalian, China**

Semester Intern 04/2023 - 06/2023

Supervisor: Prof. Xianneng Li, DUT Associate Dean of School of Economics and Management

- Worked closely with another team from School of Economics and Management, to develop a full-stack legal supervision system for Minors Protection in Dalian City, linking front-end portals, back-end data processing, to provide intelligent analysis and judgement HTMLs from views of tech and legi.
- Coded, tested, debugged, implemented and documented the front-end multi-modal data collection portal, the back-end data processing stack, and the final heat-map HTMLs using C++, Python, JS.
- Utilized Image Caption/OCR on images, Video Frame Interpolation on videos, LAS on audios to convert mountainous collected multi-modal data into text, in collaboration with management team.
- Utilized BERT, Naive Bayes, Keyword Multiclassification techniques on post-textual-processed data, to classify into 5 legi case types for management team's further refinement based on legal terms.
- Labeled collected datasets classified as case types as above with a corresponding protection type for each, then designed, trained, evaluated, and tuned a transformer model; such model was successfully utilized to take in new case descriptions to classify, label and lastly predict the protection type.
- Ended up with a patent (in progress) and a Second Runner-Up Award in Provincial Big Data Contest.

Honors and Awards

- 2022-2024 DUT International Communication Association - Overseas Communication Center (role: Minister)
- 09/2022 DUT Model Student of Academic Records, Model Student of Science and Innovation (awarded Scholarship)
- 09/2022 China Modeling Award (2‰ nationwide, leader), 02/2022 International Modeling Award (1% globally, leader)

Sports and Volunteer

- Swimming, Hiking, Kayaking, Sailing, Surfing, and UC Berkeley Inclusive Recreation Adaptive Sports Wheelchair Rugby
- Nov 14-17, 2023, Volunteer for **2023 San Francisco APEC** Economic Leaders' Week (honored by Berkeley CSA)
- Nov 3-4, 2023, Volunteer for 50th Annual UC Berkeley Open (honored by Berkeley Martial Arts Program)