Binjian **Xin**

DEEP LEARNING · AUTONOMOUS DRIVING · SOFTWARE DESIGN

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"Decoding $\neq$ Interpretation, Abstraction $=$ Understanding."

Summary

Many years of experience and solid knowledge in algorithm development, deep learning, embedded software development, hardware and system both at OEMs, automotive suppliers and startups. Have led multiple SOP projects and research teams. Machine learning practioner and software developer with proficient Python, C/C++ and design pattern knowledge. Extended experience in video based Advance Driver's Assistance System, automotive video solution and embedded system SW development and project management.

Love to contribute to scaling up the deployment of self-driving and deep learning technology in big market by providing smart solutions and thinking deeper in computation, software engineering, data engineering and machine learning operation for challenging tasks. Interested in devising a streamlined development paradigm for lowering the bar for software development and adopting new technologies and tools.

Experience

Newrizon
SENIOR TECHNICAL DIRECTOR, ADVANCED RESEARCH

Shanghai, China
Nov. 2020 - May 2024

- Reinforcemnt learning based BEV controller optimization in multimodal complex environments (10% increase in energy efficiency)[4],
- Time series anomaly detection and battery state of safety prediction based on generative models[3],
- Research in applications of multimodal foundation model and large language model in autonomous driving[12],
- Software design & development of streaming data pipeline for time sequence:
    - Online deep reinforcement learning data pipeline (ETL, Deep Learning Training/Inference pipelines) $\rightarrow$ **tspace** ,
    - CAN Application package $\rightarrow$ **candycan** ,
    - Time series analysis with generative AI $\rightarrow$ **funes-ts** .
- Chip evaluation (Chiplite Chiplet SoC on self-driving applications)

Nio
SENIOR MANAGER, AUTONOMOUS DRIVING

Shanghai, China
Nov. 2017 - Nov. 2020

- Advanced hardware and software design of L4 autonomous driving system,
- Team (10+ engineers) build-up and development management,
- Fleet: electric vehicles (10+) with level 4 sensor configuration and computing platform,
- Intelligent charging and automatic parking assistance system (public funded project),
- License application and operation of Intelligent Connected Vehicle (ICV) road test in Shanghai and Beijing,
- Top 3 at testing mileage in Beijing with T3 license,
- Chip evalutation (Huawei MDC SoC on self-driving applications)
- 5G ICV Demonstration in Hainan Boao Forum, 2019.

Patac/SAIC-GM
TECHNICAL MANAGER, ADAS

Shanghai, China
Oct. 2015 - Nov. 2017

- System & software architecture design for active safety domain unit (ADU).
- PATAC ADU A sample: system and software architecture of embedded platform.
- Software architecture of SAIC-MAXUS SV73 highway assist.
- Camera based driver monitoring system.
- Surround view camera system.

Visteon Asia Pacific
SOFTWARE MANAGER

Shanghai, China
Jan. 2015 - Aug. 2015

- SOP project of instrument clusters.

Hella Electronics
SENIOR MANAGER, SOFTWARE

Shanghai, China
Jul. 2014 - Jan. 2015

- SOP project of BCM and PEPS.

Harman R&D Center

Shanghai, China

Senior Manager, ADAS

Sep. 2009 - Jul. 2014

- Development of video based ADAS system.
- SOP projects of camera based parking systems:
    - SOP of 3D surround view system (SVS) for Geely KC-1,
    - SOP of rear view camera deployment (Geely, Ssangyong, Tata, GM, Suzuki, Hyundai and VW),
    - Fusion with ultrasonic parking assistance.
- Supervision of ADAS advanced research:
    - LDW and FCW on infotainment platform,
    - Augmented navigation,
    - Moving object detection,
    - Design of surround view demo systems (Robot car and OEM vehicles) and demos (CES, Geneva Motor Show).

Education

KIT (University of Karlsruhe)

Karlsruhe, Germany

PhD with Department of Measurement and Control Engineering (MRT) in Image Processing

Mar. 2002 - Jan. 2009

- 3D image data analysis and defect detection[6],
- Image processing and visual inspection[5],
- Image sensor fusion,
- Project (Daimler-Benz)[7],
- Teaching activities.

Tongji University

Shanghai, China

MSc in Robotics

Mar. 1998 - Sep. 2001

- "Kinematic studies for a multimodal orthopaedic training simulator", TUM, Germany,[9]
- Study and research in evolutionary algorithms.

BSc in Electrical Engineering

Sep. 1993 - Sep. 1998

- Bachelor work "Simulation of an adaptive Fuzzy-Logic System".

Skills

Programming	Python, C/C++, Rust
Development	Literate Programming, Git, Numpy, Pandas, Parquet, Arrow, Pydantic, MongoDB, Emacs
Deep learning	Tensorflow, Pytorch, LLM, >10000h
DevOps	Github Actions, Gitlab CI/CD, Docker
Documenation	LaTeX, Markdown, OrgMode
Languages	Chinese, English, German

Publications

[1] Binjian Xin. *Natural language interface and multimodal foundation model based autonomous driving desicion system.* Mar. 22, 2024. Applied.

[2] Binjian Xin. *Vehicle-mounted camera view-blocked area enhancement detection based on latent diffusion model.* May 30, 2023.

[3] Binjian Xin. *Battery safety detection method based on generative model.* Aug. 11, 2023.

[4] Binjian Xin. *Reward driven controller parameter optimization.* July 29, 2022. Pending.

[5] Binjian Xin. "Multiscale analysis of rough groove textures for three-dimensional optical measurements". In: *Optical Engineering* 48.7 (2009), pp. 073602–073602.

[6] Binjian Xin. *Evaluation and characterization of 3d surface data with groove textures.* KIT Scientific Publishing, 2009.

[7] J. Boehm, T. Hercke, N. Rau, S. Schweikert, A. Warzok, and Xin, Binjian. *Evaluation method for honed structures on motor cyliner bores.* Aug. 28, 2008.

[8] Binjian Xin. "Evaluation of two and a half dimensional surface data with form component and groove bands." In: *Machine Vision Applications in Industrial Inspection XV*. Vol. 6503. SPIE. 2007, pp. 95–104.

[9] M. Frey, R. Riener, R. Burgkart, and Xin, Binjian. "Robot based teaching system: The Munich knee simulator." In: *VDI BERICHTE*. Vol. 1679. VDI. 2002, pp. 491–496.