WAYNE HARBURN

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PROFESSIONAL SUMMARY

Innovative AI Engineer and Systems Architect with extensive experience developing cutting-edge autonomous systems that integrate AI, robotics, and computer vision. Deep expertise in developing VLA/VLM/LLM solutions with demonstrated success creating autonomous agents, natural language processing platforms, and robotics applications that bridge perception, reasoning, and action. Proven track record of translating complex technical challenges into functioning AI-driven autonomous systems with real-world impact. Skilled in establishing strategic technical vision, building interdisciplinary teams, and delivering innovative solutions that push technological boundaries.

CORE QUALIFICATIONS

- **Autonomous Systems Architecture**: End-to-end system design integrating perception, reasoning, and action for autonomous robots
- **VLA/VLM/LLM Integration**: Pioneering work connecting vision-language models with robotic action systems
- **Robotic Navigation & Control**: Advanced drone and robotics control systems with real-time decision making
- **AI Agent Development**: Multi-agent frameworks with specialized roles, planning capabilities, and coordination protocols
- **Knowledge Representation**: Innovative approaches to semantic mapping, world modeling, and knowledge graph integration
- **Large Language Models**: Custom LLM implementation, fine-tuning, RLHF, reasoning enhancement, and context optimization
- **Robotics Stack**: Computer vision, sensor fusion, motion planning, and autonomous navigation
- **Software Development**: Python, C++, robotics frameworks, cloud infrastructure, CI/CD, Agile methodologies

PROFESSIONAL EXPERIENCE

AISEARCH GLOBAL

Founder & Chief Technology Officer | 2024 - Present

Led development of an AI-powered autonomous agent platform integrating advanced perception, reasoning, and action capabilities. Focused on building systems with deep contextual understanding and intelligent environmental interaction.

Technical Achievements:

- Developed an **autonomous multi-agent system** with specialized roles and sophisticated coordination protocols enabling complex task completion without human intervention
- Engineered hierarchical **planning and reasoning systems** for autonomous agents, incorporating dynamic reasoning and real-time adaptation to changing environments
- Built advanced **RAG architecture** with multi-hop reasoning, enhancing information retrieval accuracy
- Created **proprietary vector embedding system** achieving high semantic accuracy, enabling nuanced understanding of user queries and environmental context
- Implemented **LLM fine-tuning methodology** reducing hallucinations by 63% while improving task completion rates
- Designed **document understanding pipelines** combining NLP and generative AI techniques to extract structured information from complex unstructured data
- Developed "Pam," an **AI assistant powered by custom-tuned LLMs** with sophisticated planning capabilities and tool use, enabling autonomous task management with minimal human intervention

ADVANCED AUTONOMOUS SERVICES

CEO & Technical Architect | 2021 - 2022

Led a team developing AI-powered autonomous systems with applications in data processing, document intelligence, and business intelligence, focusing on systems that could independently reason about and interact with their environment.

Technical Contributions:

- Designed **end-to-end document intelligence platform** combining OCR, NLP, and generative AI to transform unstructured documents into structured, queryable knowledge
- Created framework for **autonomous business intelligence agents** capable of self-directed data analysis and insight generation
- Built **neural network architecture** for processing complex, multi-dimensional data streams to model environments

H ROBOTICS LIMITED

CEO & Chief Designer | 2012 - 2021

Founded and led company developing autonomous drone systems and related software platforms, winning multiple innovation awards including the 2020 National Technology Award for Innovative Enterprise Product of the Year.

AI & Robotics Development:

- Designed and built **HiSight, LoSight and HydroSight autonomous vehicles** with sophisticated autonomous navigation and decision-making capabilities
- Integrated **early foundation models** for perception enhancement and decision support in autonomous drone systems
- Developed **autonomous coordination systems** for drone fleets using distributed AI architecture
- Designed and built Reuters' first aerial drone with autonomous capabilities
- Built comprehensive **Flightcloud platform** for fleet management and data processing, handling real-time telemetry and command execution
- Implemented **mapping and navigation algorithms** enabling autonomous operation in complex environments
- Created **proprietary flight control software** integrating sensor fusion and autonomous decision-making

CORNICHE GROUP | Chief Operating Officer | *2008 – 2011*

Led investments and strategic development, including overseeing the purchase and development of the Bulgari Hotel London.

GLOBAL BANKING LEADERSHIP

- **ABN AMRO N.V. |** *Global Head of Commodities Trading (2004 – 2007)*
- **BNP Paribas |** *European Head of Commodities Trading (1998 – 2004)*

EDUCATION & CONTINUOUS LEARNING

- **The University of Western Australia** | 1986 - 1988
- **Specialized Training in AI & Machine Learning** | Self-directed continuous learning
- **Deep Learning & Neural Networks** | Extensive practical implementation experience
- **Robotics & Autonomous Systems** | Ongoing professional development
- **AI/ML Frameworks: TensorFlow, PyTorch, OpenAI GPT, Hugging Face Transformers**
- **Robotics & Navigation: ROS/ROS2, SLAM, LiDAR, Simultaneous Localization & Mapping**
- **Programming Languages: Python, C++, JavaScript**
- **Perception & Vision Systems: Computer vision, semantic segmentation, multimodal AI**
- **Autonomous Decision Making: Reinforcement Learning, knowledge-based AI models**

CERTIFICATIONS

- **Private Pilot License for Helicopters (PPL-H)** | Practical experience with aerial navigation and control systems
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AWARDS & RECOGNITION

- **2020 National Technology Award for Innovative Enterprise Product of the Year**
- **2020 COG x Innovation Award for Autonomous Systems**