



BEAU HOBBA

I'm hardworking and deeply committed to any project I undertake. I have a talent for leading teams and creating complex systems.

My passions lie in automation, everyday assistive robotics, AI, earth/space exploration, agriculture and ethical robotics. I am a firm believer that robotics are a central part of our futures and are fascinated by their ability to assist our everyday lives. I wish to use my programming expertise to help develop technology which is yet to be discovered.

My hobbies include flying drones, making video edits, playing board games, making music, trying to document every Australian animal and mountain biking.



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EDUCATION

2016 to 2020 Bachelor of Engineering Honours (Mechatronics), First Class Honours

2010 to 2016 Hennessy Catholic College, Young, NSW

Rural school located in Young NSW. First in Mathematics, Maths Extension 1, Chemistry and Physics. Final ATAR of 91.2. School Captain.

SIGNIFICANT PROJECTS

2020 to 2022 Inspector Robot / Robot Brick

Designed, constructed and produced software for an AI-driven robot for NASA JPL (whilst at AKIN AI) in a team of 5 people. My role was lead Mechatronics Engineer, and I designed all embedded systems. The robot could perform person identification, ambient environmental monitoring, emotion and fatigue detection, navigation, actuation, speech recognition and object detection. I also created a multimodal artificial intelligence engine that can take different unique inputs and respond to embedded outputs, developed backend support for an interactive web application and led the development of Robot Brick, an ambient environmental monitoring robot.

ROS2, MICROROS, SENSORS, ACTUATORS, PYTHON, C, C++, RPI, ELECTRONICS, SYSTEM DESIGN, TENSORFLOW/KERAS/SK LEARN, PID CONTROL, COMPUTER VISION, LEADERSHIP, AGILE, ARDUINO/TEENSY, ASSEMBLY, FLASK, API, JAVASCRIPT, REACT NATIVE, PyQT, Sphinx

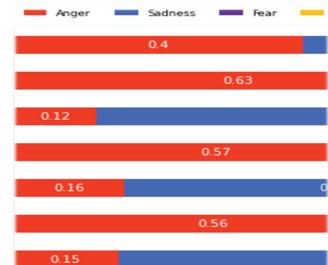


2021 to 2021 PyChat

Designed and created a chat system to handle chat flows with users in a team of 2 people (whilst at AKIN AI). My role was lead software developer, and I used tensorflow/keras to develop machine learning algorithms that could handle matching user text prompts to an associated response. Chat-based emotion detection was additionally added.

The platform was API callable and retrained itself on different machine learning models.

TENSORFLOW/KERAS/SK LEARN, PYTHON, JAVA, FLASK API, SPHINX



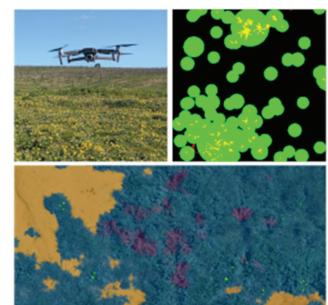
2020 to 2021 Herbicide Mapping

Finished a publication on "Efficient Herbicide Spray Pattern Generation for Site-Specific Weed Management Practices using Semantic Segmentation on UAV Imagery". Accepted and presented this paper at the Australian Robotics and Automation conference.

Used semantic segmentation and UAV data to detect, classify and geolocate common weeds on a rural property. Kinematics were determined to find the location of weeds according to latitude and longitude. Computer vision techniques were used to improve the results of the semantic segmentation techniques.

KINEMATICS, UAV CONTROL, SEMANTIC SEGMENTATION, TENSORFLOW/KERAS, CV, GEOTAGGING, MATLAB, PYTHON, C/C++, GOOGLE COLAB

https://ssl.linklings.net/conferences/acra/acra2021_proceedings/views/includes/files/pap127s2-file1.pdf



2020 Robotic Bar

This role involved working with a team of 2 other individuals to program a 'robotic bar' to promote the new Heineken 0.0, zero-alcohol beer. This full-on role involved robotic arm movement using the UR-5 robotic arms, various sensors, person detection using machine learning, an automated conveyor system, ROS interfacing and a surplus of analog I/O electrical wiring. We worked directly with a marketing team, creating various on-the-spot changes to the robot to finalise a pair of robots for a week-long activation period.

UR5-E, ROBOTIC ARMS, PYTHON, ROS, INTEL REAL-SENSE, MACHINE LEARNING, ELECTRONIC DESIGN



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SKILLS

Python



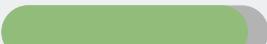
C/C++



Microcontrollers



ROS/ROS2



Systems Design



CV



Embedded Electronics



TensorFlow



Agile



React JS



Data Analytics



Robotatouille

2020 to 2022 This role involved working with 2 other individuals to program a robotic arm to cook simple meals.

This project involved robotic arm movement using the UR-5 robotic arms, various sensors, ROS interfacing, kinematics to work out the location of ingredients, a custom machine learning model (where we labelled thousands of pictures), custom 3D arm effector prints, and a GUI to create/run recipes.

The robot could stir meals, measure ingredients (using a countertop scale), pick up different utensils, collect an ingredient (using kinematics/coordinate transforms and path planning), and move items around a kitchen bench.

ROS, 3D PRINTING, ROBOTIC ARMS, UR5-E, PyQt, SENSORS, MACHINE LEARNING (KERAS/TENSORFLOW), KINEMATICS, INTEL REALSENSE, PATH PLANNING



Roost

I created my own card game for a Kickstarter campaign. Developed the associated website Roostgame.com. Used AWS Amplify, Dynamo DB, App Sync, Route 53 and the AWS CLI. Prototyped multiple versions for the final product. Worked with manufacturers to create a viable copy, play-tested with various demographics and initiated a marketing campaign with an international audience. Created ALL artworks with Adobe Illustrator, Photoshop and Dall-E.

WEBSITE, AWS, ADOBE, ILLUSTRATOR, PHOTOSHOP, REACT, GOOGLE ANALYTICS, PROTOTYPING

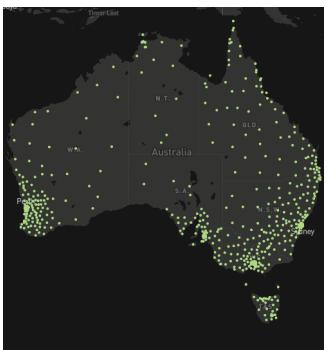


Data Analytics (TFNSW)

2022 to 2023 I have become a key figure in performing data analytics for the Future Mobility branch in Transport for NSW.

Projects have included creating geographic data for council comparisons, comparing electric vehicles, looking into vehicle destination behaviour and creating research articles for autonomous and connected vehicles. Various tasks have required online hosting for displaying the data to various teams.

PYTHON, PANDAS, NUMPY, PLOTLY, WEB SCRAPING, MATPLOTLIB



EXPERIENCE

2023 TFNSW Project Officer (Mechatronics Engineer)

- Assisted with testing of vehicles fitted with robotic apparatuses for ANCAP testing
- Data processing of robotic vehicle channel data. Involved creating reports and graphs with Python
- Worked on geographic maps and models for electric vehicle statistics relevant to NSW (Python/Plotly/Geopandas)

2020 AKIN AI

Senior Intern Advisor / Project Manager (Internship)

Junior Complex Mechatronics Engineer

Mechatronics and Software Engineer

- Developed and designed robots to assist JPL (NASA) and people with disabilities
- Managed two teams of 4 people
- Lead software developer/integrator of robotics
- System designer of embedded stack of robot, creator of multimodal AI system, assist with chat-based AI

2019 to 2020 Bioscout

Engineering Intern

- Helped create agriculture-based hardware and software to detect airborne diseases in real time
- Involved in testing sensors, integration testing components, setting up online documentation and debugging

2020 Heineken

Contracted Robotics Engineer

- Created a temporary robotic bar to promote the new Heineken 0.0 zero alcohol beer.
- Worked in a team of 3, involving robotic arm, movement, sensors, person detection and an automated conveyor system.

2023 to 2018 Roost Games

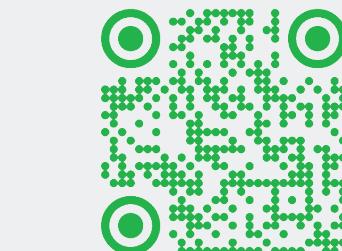
Owner, Designer, Creator

2018 to 2020 IGLU

Resident Leader

EXTRA CURRICULAR

- Sydney University Mechatronics Society (SUMO) - Marketing Officer (2019)
- Zero Robotics Mentor
- INCUBATE member - entrepreneur business creation program
- Bronze Medallion in Duke of Edinburgh, Rotary Youth of the Year
- Breed and show chickens, I-Naturalist Contributor
- Event Manager of Millennial Society (2018)



References

References available on request

Julia.T AKIN-AI Software Engineer/Developer

Stephen.L AKIN-AI Mechatronics Intern

Neesam.J AKIN-AI CIO

Alexander.H AKIN-AI AI Specialist

Daniel.W AKIN-AI Mechanical Engineer

Jack.S AKIN-AI Electrical Engineer

Maricris.B IGLU General Manager