Ben Ireland Sinclair

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EDUCATION

2017 – 2022 University of Bath

MEng (hons) Integrated Mechanical and Electrical Engineering with a year in industry placement

- Degree Awarded: **Second-Class Honours First Division**

Module Performance

- Robotics Engineering: 79%
- Aerospace Group Design Business Project: 74%
- Fluid Mechanics: 69%
- Systems modelling and simulation: 64%
- Integrated Engineering: 60%

2009 – 2017 Kingsbridge Community College, Devon

A Levels: Physics (A), Maths (A), Maths Mechanics (A), Product Design (B)
GCSEs: 11 GSCEs at grades A*-B, including Physics (A*), Maths (A*), Product Design (A*), Computer Science (A*)

ENGINEERING EXPERIENCE

- **Team Bath Racing Electric:** Worked as the Head of Electrical Systems Integration for Team Bath Racing Electric 2021-2022, The team built an electric race vehicle to compete annually at several competitions. My responsibilities included the integration of high and low voltage systems, design of electrical system housings (including high voltage accumulator and sub-pack casing). Thermal modelling and optimisation of electrical power train components. I also coordinated and mentored the work of several first-year students with the aim of developing their engineering skills for next year's team. The design successfully competed in race competitions at Silverstone and Autodromo Riccardo Paletti in Italy.
- **Year in Industry Placement:** Spent a year as an industrial placement engineer at L3Harris. During my placement I was trained in the use of PLM systems, thermal CFD software, FEM analysis and simulation guided design optimisation. During the placement the Covid-19 pandemic forced me to adapt to working from home and online communication, with minimal impact on my performance.
- **University projects:** Undertook conceptual iterative design projects including an autonomous fixed wing UAV for search and rescue, Hydraulic press, gearbox, and a small automatic cone laying machine. My final year research project was on the development of a Nano-material based X-ray tube with a focus on wide scale commercial adoption
- **Computer Aided Design:** Highly proficient in the use of CAD, design for manufacture and drawing creation. Actively use it for personal design work. I have created designs for high voltage systems, UAVs, Race vehicle electronics, head tracking devices and 3D printer components.
- **Arc welding and agricultural machinery maintenance:** Familiar in the basics of Arc and MIG welding along with agricultural machinery maintenance from working alongside my father doing maintenance on lawn mowers, tractors and bicycles over many years.
- **Commercial Mulching Machine:** Produced a design for a wastepaper reuse device with the restriction of being human powered. The resulting design was produced in a prototype with many parts being additively manufactured and CNC machined, this was completed as my final A2 project.

ACHIEVEMENTS

Academic and Educational

- Competed in formula student 2022 with Team Bath Racing Electric and regained the title of best UK electric vehicle team at Silverstone.
- Youngest scientist to be published in The Lancet, aged 10. With a team of young students, worked on an experiment to prove that bees can be trained to solve simple puzzles.
- In the summer of 2014 contributed to a team who produced prototypes for basic algae-based fluid reactors for solar panels that produced glucose. The development was taken to late stage with large scale test beds being constructed.
- Awarded Arkwright Scholarship in 2014 and received the accompanying grant. This further fuelled an interest in engineering and broadened interests from Aerospace Engineering through to Robotics, Mechanical Engineering and Physics.

Additional Technical Courses

- Head Start/Nuclear Physics – Manchester University. Four-day course focussing on application of nuclear physics. Visiting the optical, nuclear and simulation labs. Also, Jodrell Bank radio telescope and Daresbury Laboratory to demonstrate the uses of a synchrotron light source and its applications in modern material science and research.
- Small Piece Trust – Aeronautical Engineering at Loughborough University. Overview of Mechanical, Aeronautical and Automotive Engineering, as well as Electronic, Electrical and Systems Engineering.

COMPUTER SKILLS

- **General use:** Adept Knowledge of the Microsoft Office Suite of software, capable of producing professional documents and excel spreadsheet tools.
- **Programming:** Intermediate knowledge of the following programming languages, C#, MATLAB, Simulink, Python, system veri-log and visual basic.
- **CAD and CAM:** Excellent knowledge of the CAD packages Autodesk Inventor, Solid-works and Fusion 360. Experienced in designing for manufacture, considering both traditional machining and additive manufacturing techniques.

EMPLOYMENT

September 2019 – September 2020: L3Harris, Tewksbury

- Worked for a year at L3Harris for my year in industry placement, During the placement I became an integral part of the sites mechanical design team and greatly advanced my skills in mechanical design and simulation verification.
- Gained many skills in the real world technicalities of working in a large company such as, product lifecycle management, secure working practices and efficient team communication.
- I designed casings and other mechanical components for systems currently in use by UK police and security forces.

INTERESTS

- **Spare Time and hobbies:** Skiing, Walking, Climbing, Cycling, CAD modelling, Gaming, Reading, Politics.
- In possession of a 3D printer which I refurbished using 3D printed parts.
- **Academic areas of interest:** Keen interest in spaceflight especially regarding nuclear and other high energy propulsion mechanisms.
- **General:** Long standing interest in physics and gaining a greater understanding of the world.