Joost Hubbard

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Personal Profile

A Queen Mary University of London undergraduate student pursuing an MEng in Aerospace Engineering. Dedicated to spacecraft and debris modelling, with a strong foundation in spacecraft dynamics, mission planning, and design. Academic coursework and projects have equipped me with proficiency in orbital mechanics, dynamics modelling of spacecraft systems, and risk analysis. Proven professional adaptability and communication skills from experience in the civil sector, adhering to guidelines on large-scale, high-pressure projects. My upcoming MEng project is titled 'Design and Implementation of a Digital Twin for a CubeSat'. Actively seeking graduate opportunities, focusing on engineering or research roles in satellite operations, dynamics, and modelling.

Skills

Engineering Software Creo, SolidWorks, Abaqus, STAR-CCM+, FreeFlyer, ESA Master, ESA Drama, GitHub, Python, MATLAB.

Technical Skills Orbital Mechanics, Dynamics, Risk Assessment, Mission Planning, Documentation, Technical Writing, LaTeX.

Soft Skills Leadership, Time Management, Teamwork, Presentation, Communication.

Education

Queen Mary University of London
London, UK

MEng in Aerospace Engineering
Sept 2021 - Current

- Maintaining a 77.6 % academic average.
- Awarded the Drapers' Company Prize and the Engineering and Materials Science Prize for the 2023/24 academic year.
- Completed modules in flight dynamics and stability, control systems, spacecraft dynamics, numerical methods, and spacecraft systems engineering, with additional knowledge in aerospace structures, conceptual design, and applied solid mechanics.
- Led a year-long undergraduate project on the Orbital Decay and Rendezvous of an On-orbit Satellite Refuelling System, developing Python scripts to simulate orbital decay and rendezvous manoeuvres, and utilising FreeFlyer for mission planning.
- Between my third and fourth years, I contributed to and reviewed textbooks for QMUL modules on Computational Spacecraft and Symbolic Dynamics under the mentorship of Dr. Angadh Nanjangud, ensuring accuracy and clarity in technical content.

European Space Agency Academy
ESEC Galaxia, Belgium

Space Debris Training Course 2024
Sept 2024

- Completed in-depth training on space debris challenges, including the current environment, technical countermeasures, risk assessment, space traffic management, and active debris removal technologies, aligned with ESA's Zero Debris initiative for sustainable space operations.
- Gained practical experience with ESA's Master and Drama software for satellite modelling and risk analysis.
- Collaborated on a mission planning and risk assessment project focused on the disposal of a Low Earth Orbit (LEO) satellite, ensuring compliance with space debris mitigation guidelines.

Kingsbury Green Academy Sixth Form
Calne, UK

A Level Maths, Physics, and Sociology
September 2019 - September 2021

- Graduated with B, B, A*.
- Completed TU Delft 'Introduction to Aerospace Structures and Materials' online course.
- Volunteered for the 'superWASP variable stars project'.

Work Experience

BAM UK and Ireland
AWE Burghfield, UK

Trainee Civil Engineer
May 2023 - July 2023

- Conducted surveys, completed setting out, and ensured quality standards across project areas.
- Developed a detailed action plan, programme, and risk assessment for a project component.
- Introduced to CAD packages like Autodesk Civil 3D and maintained concrete test records.
- Performed marking out and pre/post-surveying using industry-standard equipment.
- Contributed to a professional team, meeting project deadlines.
- **Technical Skills:** CAD (Autodesk Civil 3D), Concrete Testing, Surveying, Documentation.
- **Soft Skills:** Teamwork, Time Management, Communication.

Swingers Crazy Golf
London, UK

Caddie
September 2022 - December 2022

- Engaged in a heavily customer-focused role, ensuring exceptional guest experiences.
- Developed skills in independent problem-solving in a fast-paced environment.
- Enhanced communication and public speaking abilities.
- Worked effectively within a cohesive team.
- **Soft Skills:** Problem-solving, Communication, Time management, Teamwork.

Halliday Fraser Monro *Remote*

Online Work Experience *Summer 2020*

- Gained CAD experience using SketchUp to create 3D structures according to specific measurements and requirements.
- Worked to a design brief and schedule, demonstrating project management skills.
- Engaged in creative thinking to fulfil design briefs, showcasing innovation and problem-solving abilities.
- **Technical Skills:** CAD (SketchUp).
- **Soft Skills:** Project Management, Creative Problem Solving, Remote Work.

Projects

Additional materials related to my projects are available on my website.

Computational Spacecraft and Symbolic Dynamics Textbook Documentation *London, UK*

Queen Mary University of London *Jun 2024 - Current*

- Working with Dr. Angadh Nanjangud and a team of contributors to document textbooks for two modules taught at QMUL on Computational Spacecraft and Symbolic Dynamics.
- Contributing as both a writer and reviewer for textbook content, ensuring accuracy and clarity in technical explanations.
- Assisting in the research and development of a third textbook focused on variable mass systems.
- **Technical Skills:** Symbolic Dynamics, Spacecraft Dynamics, VMS Dynamics, Python, Jupyter Books, Git, Github, Markdown.
- **Soft Skills:** Time Management, Teamwork, Technical Writing, Attention to Detail.

Mission planning and risk assessment for the disposal of an LEO Satellite *ESEC Galaxia, Belgium*

ESA Space Debris Training Course *Sep 2024*

- Worked as part of a multidisciplinary, multinational team to design and assess a mission plan (covering spacecraft operations, disposal, and risk assessment) for the Sentinel 2c satellite in line with ESA's space debris mitigation guidelines and supporting a zero debris approach.
- Utilised ESA Drama for satellite modelling, lifetime estimation, collision risk assessment, impact risk analysis, avoidance manoeuvres, and ground risk simulations.
- Created and presented our mission proposal to the head of the ESA space debris office and space debris engineers.
- **Technical Skills:** ESA Drama, ESA Master, Mission Planning, Risk Assessment, Guideline Adherence, Technical Documentation.
- **Soft Skills:** Time Management, Teamwork, Attention to Detail, Leadership.

Orbital Decay and Rendezvous of an On-orbit Satellite Refuelling System *London, UK*

Queen Mary University of London *Sep 2023 - July 2024*

- Developed an on-orbit refuelling system as part of a third-year project, gaining insight into the complex requirements of space applications.
- Created Python scripts to simulate orbital decay and lifetime estimates.
- Designed and simulated orbit maintenance and rendezvous manoeuvres to facilitate mission planning and fuel sizing.
- Employed industry-standard software such as FreeFlier for simulation and mission planning.
- **Technical Skills:** Orbital Mechanics, Python with SciPy, FreeFlyer, Overleaf, LaTeX.
- **Soft Skills:** Time Management, Teamwork, Presentation skills, Report writing.

Computational Fluid Dynamics Project *London, UK*

Queen Mary University of London *Nov 2023*

- Analyzed inviscid flow over a compressor stator blade using STAR-CCM+ to evaluate mesh refinement and accuracy order effects.
- Identified fine second-order mesh as optimal for accurate pressure and force coefficient predictions.
- Observed smoother and more stable simulations with increased refinement and accuracy.
- Utilised local mesh refinement to achieve similar solutions with reduced computational demands.
- **Technical Skills:** CFD, Mesh Refinement, STAR-CCM+.
- **Soft Skills:** Data Analysis, Problem Solving, Report Writing.

Interests

Cooking I love cooking. In my spare time, you can often find me in the kitchen cooking new recipes.

Hiking and Camping I regularly make time to venture out into nature, being an avid hiker and camper.

Motor sports I am an avid follower of Formula One, making sure to watch the Grand Prix or discuss technical details with others.

References available upon request.