


James O'Flanagan

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Summary

Seasoned Computer Engineer with over two decades of experience specializing in mechanical and computational engineering. Proven track record in deploying FEA, CFD, and high-performance computing solutions to solve complex engineering challenges. Adept at leading technology development programs, with a deep passion for conservation and the application of engineering principles to environmental stewardship.

Professional Computational Experience

Chief Engineer & Founder, OAPSIE Inc.

Mar 2019 – Present

- Developed Edi Oapsie, an engineering project leveraging Generative AI to explore its application in mechanical engineering, showcasing potential in automating design processes, enhancing innovation, and problem-solving within biotech and engineering fields.
- Developed and patented "Pennantview," a computational methodology integrating AI for sports performance analysis using an innovative platform of computational methodologies to model human biophysical movements, with implications for biotech and sports science.

Lead Design Engineer, Ophthalmic/Biotech Startup

Jan 2020 – Dec 2022

- Led global team that wrote software for laser eye surgery, focusing on AI image processing & multi-physics simulations.
- Directed the development of software for eye biomechanics simulations, incorporating AI for predictive analysis.
- Innovated in digital engineering, focusing on software design and artificial intelligence applications in medical devices.
- Led software and hardware system design, incorporating AI to enhance ophthalmic diagnostic and treatment solutions.
- My work resulted in several patents, underscoring innovations in biotech and ophthalmic treatment technologies.

Senior Engineer, Johnson Matthey, Ravenna, OH

September 2019 – October 2020

- Managed design & prototyping for natural gas plant equipment, applying simulation tech for efficiency improvements.
- Wrote custom codes for CFD and FEA simulation technology for natural gas plant analysis.

Senior Engineer, Rubber Simulation Projects

Goodyear 2001-2012, Hankook 2016-2019

- Led the development of simulation software, contributing to significant cost savings & efficiency improvements.
- Conducted FEA modeling of rubber tires, including composite physics, engineering mechanics, & visco-elasticity.

Education

The University of Akron, Akron, OH. 2007 – 2010.

Master of Science in Engineering Management. Specialization: Finite Element Analysis and Computational Mechanics, & International Business. GPA: 3.85

- Thesis: "Outsourcing FEA jobs at Large US Manufacturing Companies: Sound or Unsound?"
- Developed a computational model simulating the biomechanical properties of synthetic rubbers, drawing parallels to human tissue mechanics in biotechnological applications.

Case Western Reserve University, Cleveland, OH. 2000 – 2002.

Bachelor of Science in Computer Engineering. GPA: 2.9

- Coursework included Advanced Programming, Machine Learning, Artificial Intelligence, and Bioinformatics, providing a solid foundation in the computational skills required for biotech and AI research and development.
- Capstone Project: "Design and Implementation " exploring the early use of AI to innovate in the biotech space.

John Carroll University, University Heights, OH. 1998 – 2000.

Major: Applied Physics. GPA: 3.86

- Emphasis on Engineering Physics and Applied Physics, offering a strong analytical and problem-solving skill set applicable to challenges in biotechnology and material science.
- Engaged in research projects focused on the application of physical principles to biological systems, laying the groundwork for a career at the intersection of technology and life sciences.

Skills

- **Artificial Intelligence & Machine Learning:** Proficient in AI and ML algorithms for predictive modeling, data analysis, and automation, with a focus on biotech and engineering applications.
- **Finite Element Analysis (FEA):** Advanced expertise in FEA for simulating mechanical and biological systems, with applications in medical device development and biotechnological research.
- **Computational Modeling:** Skilled in developing computational models for complex biological and mechanical processes, enhancing accuracy in simulations and predictive analytics.
- **Software Development:** Experienced in leading software development teams, specializing in the integration of AI, ML, and computational techniques into engineering projects.
- **Biomechanics & Biotechnology:** Knowledgeable in biomechanics and biotechnological principles, crucial for the innovation of biomechanical devices and understanding tissue-material interactions.
- **Data Analysis & Predictive Analytics:** Proficient in statistical analysis and predictive modeling, capable of extracting insights from complex datasets.
- **Robotics & Automation:** Understanding of robotics and automation technologies for enhancing manufacturing and research efficiency in biotechnological applications.
- **Computational Engineering:** Expertise in FEA, CFD, and custom numerical methods for engineering simulations.
- **Project Management:** Track record of leading cross-functional teams in software development & engineering projects.
- **Technologies:** Proficient in Java, Python, C++, & SQL; experienced with ANSYS, Abaqus, & proprietary software dev.

Professional Memberships & Conferences

- Memberships:
 - **American Society of Mechanical Engineers (ASME):** Expertise in developing and applying AI algorithms for predictive modeling, data analysis, and automation in biotech applications.
 - **Sigma Pi Sigma Physics National Honor Society:** Member since May 1999, recognizing outstanding achievement in physics.
 - **The Order of The Engineer:** Inducted in March 2023 for the highest standards of engineering ethics & practice.
 - **Society for American Baseball Research (SABR):** At intersection of sports science & mechanical engineering.
 - **NEO Science Fair Judge:** Served as a judge for the 70th Annual NEO Science and Engineering Fair at Cleveland State University in March 2023.
 - **Golden Key International Honor Society:** Inducted in Nov. 2008 for academic excellence & leadership potential
- Conferences:
 - **SABR 51, ASME IMECE, ASCRS 2021, AAO 2021, ASCRS 2022, AAO 2022, Tire Society 2016, Tire Society 2017** – Contributions and presentations highlighting the intersection of AI, mechanical engineering, and biotech.

Patents

These patents highlight my capability to lead innovative projects at the intersection of computer engineering and specialized domains, such as healthcare and sports science, showcasing my expertise in AI, machine learning, and computational modeling.

- **VIRTUAL INTEGRATED REMOTE ASSISTANT APPARATUS AND METHODS**
 - *Patent Application #20230067625, Filed Aug 24, 2022.* Developed an advanced system for that focused on enhancing surgical procedures through innovative feedback mechanisms, eye tracking verification, and graphical display of virtual assistants. This technology significantly improves the accuracy and efficiency of medical operations, showcasing a novel integration of AI in healthcare.
- **SYSTEMS AND METHODS FOR OCULAR FINITE ELEMENT MODELING AND MACHINE LEARNING**
 - *Patent Application #20230351073, Filed in 2023.* Innovated a comprehensive system for ocular finite element modeling, incorporating machine learning to predict and analyze eye surgery outcomes. This invention paves the way for personalized surgical approaches and improved patient care in ophthalmology.
- **OCULAR SIMULATED CAMERA ASSISTED ROBOT FOR LIVE, VIRTUAL OR REMOTE EYE SURGERY TRAINING APPARATUS AND METHOD**
 - *Patent Application #20230142530, Filed in 2023.* Engineered a state-of-the-art ocular simulation system, employing a robotic assistant for surgical training. This technology offers a groundbreaking platform for training surgeons in a risk-free environment, enhancing skill development through virtual and remote methodologies.
- **COMPUTATIONAL METHODOLOGY FOR DETERMINING BASEBALL BIOPHYSICAL QUANTITIES**
 - *Patent Application #20230351073, Filed in 2023.* Conceived a unique computational methodology to analyze baseball biophysical movements. This inventive approach utilizes AI to improve strategic decision-making in sports science, demonstrating the versatility of computational modeling across diverse fields.