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Jacob Fredegaard Hansen

Professional Profile

Outgoing and results-driven computational biologist with expertise in bioinformatics, proteomics, and structural modeling. Experienced in Linux, R, Python, and Bash, and in building reproducible, containerized workflows on HPC platforms. Skilled in supporting researchers and developing scalable bioinformatics pipelines. Motivated to translate omics data into clinical and research insights in interdisciplinary environments.

Skills

Technical Skills

- **Programming:** Highly skilled in R for statistical analysis and data manipulation, and proficient in Python for data science and automation tasks.
- **Tools & Environments:** Proficient in Docker for development environments, ColabFold for protein structure prediction, VMD for molecular analysis, and experienced in managing Linux systems, writing Bash scripts, and using Git for version control.
- **AI Tools:** Skilled in applying and developing LLM-based AI workflows in biosciences using GPT and reasoning models by ChatGPT, Google Gemini, Claude, and JuliusAI.

Soft Skills

- **Leadership & Management:** Proven leadership in academic and volunteer settings, guiding teams and individuals with a focus on development, collaboration, and achieving goals.
- **Communication & Outreach:** Strong communicator skilled in conveying complex concepts across diverse audiences, enhancing teaching, outreach, and international collaboration.
- **Interpersonal Skills:** Effective in teamwork, collaboration across disciplines, and cultural competency, fostering inclusive and productive environments.

Experience

2025 – Present **Data Science Specialist in Drug Design and Pharmacology**, *University of Copenhagen*, Copenhagen

- Leading cross-institutional development of AI-driven workflows for research and pharmaceutical data science applications.
- Driving the design and implementation of data science curricula across pharmaceutical programmes at the University of Copenhagen and the University of Southern Denmark.
- Designing and facilitating hands-on teaching frameworks, workshops, and applied exercises to advance computational proficiency and data literacy.
- Leading strategic outreach and communication initiatives to strengthen academic–industry engagement.

2022 – 2024 **Data Scientist in Computational Proteomics**, *University of Southern Denmark*, Odense

- Led the development and integration of a proteomic workflow into the National Health Data Science Sandbox for Training and Research, thereby enhancing data analysis capabilities. This work was supervised by Prof. Ole Nørregaard Jensen and Assoc. Prof. Veit Schwämmle.
- Implemented a Docker-based virtual environment on the UCloud HPC platform, equipped with GUI-enabled tools and integrated ColabFold for GPU-accelerated protein structure predictions.
- Co-led the establishment of the AI SIG in the department, facilitated AI tips sharing for research and education, and fostered discussions on AI usability at interdisciplinary SDU forums.
- Designed and delivered advanced coursework in biostatistics, protein science, and bioinformatics for M.Sc. and Ph.D. students, covering statistical techniques in R, protein structure modeling, and applied bioinformatics workshops.
- Provided computational supervision for M.Sc. and B.Sc. thesis projects and supported researchers with daily computational assistance and workshops on protein modeling and programming in the Protein Research Group (>60 people).

2024 – Present **Member of the Young Academy Panel**, *Danish Data Science Academy*, Lyngby

- Supporting the organization of DDSA events and fostering community engagement.
- Serving as a jury member in the Danish National Championship in AI (DMiAI), supporting talent development and AI awareness among university students across Denmark.
- Collaborating with panel members to develop new initiatives that strengthen the mission of DDSA and drive innovation.
- Providing feedback on DDSA's strategy and activities.

2023 – 2024 **iGEM Supervisor**, *University of Southern Denmark*, Odense
- Mentoring the SDU iGEM Team in the iGEM Competition, the world's largest competition in synthetic biology, focusing on leadership, programming, bioinformatics, and project management.
- Providing expertise in programming, coding, and best practices for version control using Git assisting in the development and maintenance of the team's wiki.
- In 2023, the SDU iGEM Team achieved the *Gold Medal* and the *Special Prize for Best Integrated Human Practices*, and secured nominations for *Best Bioremediation Project*, *Best Sustainable Development Impact*, and *Best Presentation*.
- In 2024, the SDU iGEM Team won the *Silver Medal* and was nominated for the *Special Prize for Best Education*.

2019 – 2022 **Outreach Ambassador**, *University of Southern Denmark*, Odense
- Facilitated lectures and laboratory/bioinformatics exercises for high school students.
- Orientation to high school students at biotechnology camps.
- Assisted in departmental marketing efforts.

2020 – 2022 **Teaching Assistant**, *University of Southern Denmark*, Odense
- Taught computational visualization of protein structures and interactions using VMD software.
- Enhanced student proficiency in computational tools for molecular analysis.
- Integrated theoretical concepts with practical visualization exercises.

2018 – 2022 **Student Representative in the Teaching Committee**, *University of Southern Denmark*, Odense
- Pre-processed academic assessments for study board case handling and recommended revisions to program regulations and course descriptions.
- Contributed to the development of degree programs and provided educational advice to the Head of the Department.

2018 – 2022 **IT Supporter**, *University of Southern Denmark*, Odense
- Assisted with exams and daily IT-related inquiries while ensuring GDPR compliance in handling personal information.
- Supported digital media projects in FabLab.

Education

2020 – 2022 **Master of Science, Computational Biomedicine**, *University of Southern Denmark*, Odense

Key achievements:
- Became proficient in analyzing large datasets through the manual curation of a motif database using public resources.
- Developed skills to utilize R and Linux environments, employing Bash and DuckDB for effective data management and analysis.
- Completed a master project (60 ECTS) under the supervision of Asst. Prof. Jesper Grud Skat Madsen, conducted at the Section of Functional Genomics and Metabolism at the Department of Biochemistry and Molecular Biology and the Section for Data Science and Statistics, Department of Mathematics and Computer Science. Thesis title: *PWM-based Prediction of Transcription Factor Binding Sites*.

2017 – 2020 **Bachelor of Science, Biochemistry and Molecular Biology**, *University of Southern Denmark*, Odense

Key achievements:
- Won a gold medal for our project *Conjugaid* in the iGEM Competition, the world's largest synthetic biology contest, through an extracurricular SDU Talent Program, accounting for an additional 30 ECTS points.
- Gained experience in quantitative transcriptomic data analysis of bulk RNA-seq data using R in various projects, supervised by Prof. Susanne Mandrup, and completed my bachelor's thesis: *Genome wide investigation of the effect of the A / B domain of PPARγ*.
- Managed and facilitated projects and events as the chair of the department's student association.

Personal Information

Nationality Danish

Languages English (Fluent), Danish (Native), German (Intermediate)

Hobbies and Interests

- **Leadership & Community:** More than 20 years of involvement in KFUM Spejderne, focused on youth development and leadership training.
- **Outdoors & Running:** Enjoy hiking, nature, and endurance training.
- **Photography & Music:** Music photographer capturing live performances and visual storytelling.