Leonhard **Kellerer**

MSc Aerospace

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Buschingstraße 63, 81677, München
Born 17th March 1998 (27 years) in Munich

I have experience in implementing [matrix-free CutFEM] finite-elemet methods in deal.ii.

I am especially interested by bringing my skills together in the development of advanced high-order schemes for fluid dynamics. (intersection of my skills) - solving adavanced physics porblems

Développeur et concepteur JEE depuis plusieurs années, j'ai également une expérience de développement sur l'ensemble de l'écosystème Java (Android, J2ME sur PDA et Javacard sur chipset NFC). J'occupe aujourd'hui un poste d'architecte logiciel et reste passionné par mon métier et par les nouvelles technologies en général. Particulièrement intéressé par les nouveaux usages et les opportunités que peut amener le développement de la 4G sur le territoire, je souhaite poursuivre ma carrière sur des projets de développement mobile innovants en qualité d'architecte logiciel et/ou développeur/concepteur.

Skills

Programming	**Python** (NumPy, JAX, Matplotlib, SciPy, Cantera), **C++**, MATLAB
Frameworks	Spring, Spring Boot, **Ionic 3**, Angular 2, Angular 4, ZK, JBoss RichFaces
Bases de données	IBM DB2, Oracle Database, Microsoft SQL Server, MySQL, PostgreSQL
Outils de développement	**IntelliJ Idea**, **Eclipse**, Visual Studio Code, Maven, Ant, SVN, git
Middleware	**JBoss EAP**, **Apache Tomcat**, Websphere Application Server (*WAS*)
Systèmes d'exploitation	Mac OS X, Windows Server, Windows 7, Linux Redhat, Linux Centos
Autres	architecture SOA, technologies RFID, NFC et code barre 1D/2D

Education

2025 Master of Science in Aerospace at Technical University of Munich
- Term paper "Investigation of Reacting Shock-Bubble Interactions in JAX-Fluids, graded 1.0
- Master's thesis "A High-Order Matrix-Free CutFEM Approach for Parabolic Two-Phase Problems with Moving Interfaces", graded 1.0
- Graduated with the final grade 1.3

Winter semester 2022-2023 Erasmus exchange at the University of Liège, Belgium

2021 Bachelor of Science in Mechanical Engineering at Technical University of Munich
- Subject of the final thesis : "Analysis of Deep Reinforcement Learning Strategies for Implicit LES Modeling", graded 1.0
- Graduated with the final grade 2.0

2016 German Abitur

Languages

German	●●●●●
English	●●●●●
French	●●○○○
Swedish	●○○○○

Theses

A High-Order Matrix-Free CutFEM Approach for Parabolic Two-Phase Problems with Moving Interfaces 2024 - 2025
Master's Thesis

FEM | deal.ii | C++ | git

Investigation of Reacting Shock-Bubble Interactions in JAX-Fluids 2022
Term Paper
Development of the reactive flow submodule for the differentiable finite volume code JAX-Fluids.
FV | Python | JAX | JAX-Fluids | git

Analysis of Deep Reinforcement Learning Strategies for Implicit LES Modeling 2020-2021
Bachelor's Thesis
Implementation of WENO finite-volume methods for the turbulent Burgers and Kuramoto-Sivashinsky equations. Control of stencil weights to achieve an optimal implicit turbulence model.
FV | RL | Python | PyTorch

Professional Experience

May 2023 September 2023	**Research Assistant, TUM Chair of Aerodynamics and Fluid Mechanics** Continuation of term paper project : integration of differentiable reaction kinetics into JAX-Fluids. Extension to more advanced reaction mechanisms Python | JAX
April 2023 July 2023	**Teaching Assistant, TUM Assistant Professorship of Sustainable Future Mobility** Supported the practice sessions of *Thermodynamics I for Aerospace*
April 2022 July 2022	**Teaching Assistant, TUM Assistant Professorship of Sustainable Future Mobility** Supported the practice sessions of *Thermodynamics I for Aerospace*
October 2021 March 2022	**Research Assistant, TUM Chair of Aerodynamics and Fluid Mechanics** Supported the development of JAX-Fluids, including a test suite to verify the correct behavior of the code Python | JAX
August 2017 September 2017	**Preliminary Internship, Knorr-Bremse Systeme für Schienenfahrzeuge GmbH** Technical internship in order to gain practical knowledge with respect to machining, forming, joining and disjoining processes. Departments experienced were the machining workshop for prototype manufacture, apprenticeship workshop and service workshop, brake test and service air supply
June 2017 August 2017	**Preliminary Internship, BMW AG** Technical internship in the departments for concept car manufacture, bodywork, joining processes, assembly, component testing and additive manufacturing

References

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