Bettina Johanna Ballin

Software Engineer | AI & Security Specialist | Consultant

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WORK EXPERIENCE

Self-Employed, IT Freelancer, Software & Consulting — Remote / Germany, Apr 2025 – Present

- Advising organizations on the adoption of digital tools and technologies to improve efficiency, information security, and process quality
- Acting as an External Data Protection Officer, advising on data protection, information security, AI governance, and the compliant use of AI systems
- Design, development, and operation of web and software solutions for small and medium-sized enterprises

Fraunhofer SIT, Research Engineer in Secure Software Engineering — Darmstadt, Nov 2022 – Apr 2025

- Worked in interdisciplinary research teams on the development of secure software systems and contributed to research and project reports
- Authored scientific publications in the fields of Artificial Intelligence and Cybersecurity
- Research and development of AI-based anomaly detection for monitoring systems
- Conducted penetration tests for governmental organizations, including documentation of results within Information Security Management Systems (ISMS)

Software AG, webMethods Consultant — Darmstadt, Feb 2018 – Jun 2020

- Advised and supported IT teams at leading German banks and insurance companies in integrating complex system landscapes
- Implemented backend and frontend solutions using the webMethods integration platform to connect and orchestrate heterogeneous systems
- Contributed to agile projects (Scrum, Kanban) and implemented technical solutions based on business requirements
- Trained customers in the use of integration platforms and supported the introduction of new technologies

Technical University of Darmstadt, Student Assistant — May 2022 – Sep 2022

- **Tutorial Statistical Machine Learning**: Supervising exercise groups and supporting class activities
- **PTW Institute:** Implementation of energy flexibility tools in Python, development of web apps using Flask and Docker — Oct 2020 – Apr 2022
- **SECUSO Research Group:** Development of Thunderbird add-ons to protect against phishing attacks — Mar 2016 – Dec 2017

Staufenbiel Institute, Event Hostess & Promotion — Rhine-Main Area, Germany, Oct 2014 – Mar 2015

- Recruiting and event organization focused on young university graduates

EDUCATION

M.Sc. **Technical University of Darmstadt** Oct 2020 – Oct 2022

- M.Sc. Computer Science: Grade: 1.28 (excellent)
- Master's Thesis: *Robustness of Membership Inference Attacks on Neural Networks with Label-Only Exposures*

B.Sc. **Technical University of Darmstadt** Oct 2013 – Dec 2017

- B.Sc. Computer Science: Grade: 1.9 (good)
- Bachelor's Thesis: *Toolbased Detection of Malicious Links in Online-Email-Applications*

Abitur **Ulrich-von-Hutten-Gymnasium, Schlüchtern** Aug 2005 – Jul 2013

- General university entrance qualification

CERTIFICATES AND AWARDS

- **T.I.S.P. TeleTrust Information Security Professional** (2023)
- **Germany Scholarship [Deutschlandstipendium]** (2020)
- **webMethods 9.9 Certified ESB Developer** (2018)

SKILLS AND COMPETENCIES

- **Programming Languages:** Java, Python, C/C++, C#, SQL, JavaScript, XML, LaTeX
- **Software Engineering, Web & APIs:** Software Architecture, Software Design, Backend and Frontend Development, Full-Stack Development, System Integration, REST APIs, Web Services, API Design, OpenAPI/Swagger, Flask, Angular, HTML, CSS, jQuery, Postman, Requirements Engineering
- **AI & Machine Learning:** Statistical Machine Learning, Deep Learning, TensorFlow, PyTorch, Natural Language Processing (NLP), Computer Vision, Anomaly Detection, Generative AI, LLM Applications, Data Preprocessing, Feature Engineering, Model Training, Hyperparameter Optimization, Model Evaluation, Statistical Analysis, ML Deployment & Monitoring
- **Data & Databases:** PostgreSQL, Oracle, MongoDB, Data Modeling, Data Pipelines, Data Validation
- **IT Security & Compliance:** Secure Software Engineering, Secure Code Review, Penetration Testing, Vulnerability Assessment, Fuzzing, Information Security, Data Protection, AI Governance, AI Security, Privacy Engineering
- **DevOps, Infrastructure & Tools:** Docker, Git, GitHub, GitLab, CI/CD, Linux, Windows, Server Administration, Hosting, Deployment, Maintenance, Automation & Scripting, Jira, Confluence, Visual Studio Code, Claude Code, Android Studio, Eclipse
- **Consulting, Project Management & Research:** Client Consulting, Project Acquisition, Requirements Analysis, Technical Solution Design and Architecture, Project Management, Effort Estimation, Proposal Preparation, Scrum, Scientific Research, Research Prototypes, Scientific Publications, Technical Documentation

LANGUAGE SKILLS

- German: Native
- English, Spanish: Fluent
- French, Italian: Intermediate
- Chinese: Basic

ADDITIONAL INFORMATION

- Interests: piano, languages, sports, travel
- Strengths: Analytical and structured approach to complex technical challenges, quick comprehension, strong interest in technical and mathematical challenges, team spirit and communication