Halvor Teigen

Backend Developer & Software Engineer

halvorot@gmail.com
+47 97 47 00 77

Halvor Ødegård Teigen works as a backend developer with a tangential focus on DevOps. He has a solid academic background with a Master's degree in cybernetics and robotics from NTNU. Through his engagements at Statens Vegvesen and Statnett, he has demonstrated proficiency in Java and Spring Boot, and gained experience as both team lead, scrum master and developer in interdisciplinary autonomous teams with an agile development methodology.

Halvor is committed to continuous growth and has invested time in several certifications and courses. He is ISTQB-certified in several test areas, Kafka-accredited through Confluent, and has completed courses in both Java, Kotlin and AWS.

With almost three years of experience as a developer he has taken on the role as team lead and Java backend developer on a test automation project at Statnett. Here, he has developed applications and frameworks that use technologies such as Kafka, Amazon S3, Docker, Spring Boot, REST APIs and SQL databases. He has used GitLab CI/CD pipelines and Ansible for build and deploy to review, test and production environments on the Kubernetes platform OpenShift. Halvor has also had an integral role in the development of a solution for automated integration and value chain tests in CI/CD pipelines using temporary OpenShift environments.

He has previously worked as a developer in the test data team at Statens Vegvesen, where he used Python to generate synthetic test data and Java to develop an application for test data management. The project further revealed demands and potential that led Halvor to take responsibility for the development of central customer services within analysis and generation of synthetic data for testing.

As a person, Halvor is easy going and eager to learn with an "Everything can be learned"-mentality. He has shown the ability to take responsibility and ownership of tasks, and is devoted to delivering work he can be proud of in hindsight. He keeps up to date with the state of the art, both within and outside of his own professional field, and his wide range of experiences has given him the ability to cooperate with different personalities and contribute to holistic solutions from an interdisciplinary perspective.

Key qualifications

- Backend: Java, Python, C++, Spring Boot, Kafka
- DevOps: Git, Docker, Gitlab CI/CD, Ansible, OpenShift
- Database: SQL, JPA, Oracle, MS SQL Server
- Test tools: JUnit, Mockito, Postman, Testcontainers
- Machine learning, data modeling, GDPR

Relevant courses and certifications

- Kotlin for Java Developers
- Java SE 12 Programming
- GitLab Certified CI/CD Associate
- Confluent Kafka Fundamentals Accreditation
- AWS Certified Solutions Architect - Associate
- ISTQB Certified Tester, Foundation Level

Assignment overview

Statnett	TOD - Test automation and data	Developer, Team lead	08.2022–present
Sopra Steria	Service development - Test Data	Service developer, Researcher, Developer	03.2022–07.2022
Norwegian Public Roads Administration	Syntopia	Developer, Backend developer	09.2021–02.2022
Norwegian University of Science and Technology (NTNU)	Master Thesis	Developer & Author	01.2021–06.2021
Norwegian University of Science and Technology (NTNU)	Specialization Project	Developer & Author	08.2020–12.2020
Kongsberg Maritime	SmartShip	Developer	06.2019–08.2019
Norwegian University of Science and Technology (NTNU)	Project - Real Time Elevators	Developer	01.2019–05.2019

Assignment details

Customer: Statnett
Assignment: TOD - Test automation and data
Role: Developer, Team lead
Duration: 08.2022–present

Competencies: Apache Kafka, Test automation, Test data, Java, Spring Boot, REST API, Docker, Red Hat OpenShift, XML/XSLT, JSON, GitLab CI/CD, DevOps, CI/CD pipelines, Amazon S3 Bucket, Customer Management, Team management, Delivery Scheduling, Needs analysis, Red Hat Ansible, Kubernetes, Atlassian Jira

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Customer: Sopra Steria
Assignment: Service development - Test Data
Role: Service developer, Researcher, Developer
Duration: 03.2022–07.2022

Competencies: General Data Protection Regulation (GDPR), Service development, Computer modeling, Sales, SQLAlchemy, React.js, Python, Pandas, Microsoft PowerPoint, Presentation skills, Differential Privacy

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Customer: Norwegian Public Roads Administration
Assignment: Syntopia
Role: Developer, Backend developer
Duration: 09.2021–02.2022

Competencies: Git, Oracle Database, SQL, Python, Pandas, Atlassian Jira, Atlassian Bitbucket, Java, Spring, SQL Developer, Pytest, JPA, Jenkins, Apache Maven, Hibernate, JSON, Anaconda, IntelliJ IDEA, Microsoft Visual Studio Code, General Data Protection Regulation (GDPR), Postman, Test data, XML/XSLT, Spring Boot, Application Programming Interface (API), DevOps, Atlassian Confluence, Red Hat OpenShift, Continuous Integration and Continuous Delivery (CI/CD)

Customer: Norwegian University of Science and Technology (NTNU)
Assignment: Master Thesis
Role: Developer & Author
Duration: 01.2021–06.2021

Project description: Halvor's master thesis focuses on stabilization of off-shore windturbines using machine learning, specifically Safe Reinforcement Learning. Off-shore windpower is becoming increasingly important on the path towards a more sustainable world. Due to high wind speeds and large waves, the turbines experience extremely large destabilizing forces, thus active stabilization can increase both safety and efficiency.

Traditional control methods require mathematical models of the turbine dynamics. These are known to be complicated and hard to derive control laws for. This master thesis takes an alternative approach by using Reinforcement Learning, where an agent teaches itself the dynamics and the optimal action in a given state. The lack of guarantees on constraint satisfaction is a root problem in machine learning, thus the thesis combined Reinforcement Learning with Predictive Safety Filtering to ensure constraint satisfaction.

The implementation is in Python and the OpenAI Gym framework. An extensive report is also written, which includes both results and the required theoretical background.

The thesis was written as a joint master thesis with one other student. The thesis was also nominated for Norwegian Open AI Lab's "Best AI Master's Thesis Award 2021".

Competencies: Python, Machine learning, Git, Simulation, Artificial intelligence (AI), LaTeX, Project Planning, Matplotlib, NumPy, Mathematical modeling, Troubleshooting

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Customer: Norwegian University of Science and Technology (NTNU)
Assignment: Specialization Project
Role: Developer & Author
Duration: 08.2020–12.2020

Project description: Halvor's work on the specialization project explored various Deep Reinforcement Learning algorithms and investigated their performance in the application of path-following and obstacle-avoidance for autonomous vessels. This was done through training of multiple agents for each algorithm as well as extensive generalization testing. A custom performance function was developed to create a quantitative measure of performance for comparison of the selected algorithms. The project also led to a publication in the journal Frontiers in Robotics and AI.

The implementation is in Python and the OpenAI Gym framework. An extensive report is also written, which includes both results and the required theoretical background.

Competencies: Deep Learning, Machine learning, Project Planning, Git, LaTeX, Python

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Customer: Kongsberg Maritime
Assignment: SmartShip
Role: Developer
Duration: 06.2019–08.2019

Project description: Halvor worked on the summer project SmartShip in the "Autonomous Control" group. Together with a team of about 12 students, he developed an autonomous ship. This was a colaboration between three groups: Autonomous control, Cyber security and Shore control center. A scaled-down model of the Yara Birkeland ship was equipped with algorithms for autonomous waypoint following and obstacle avoidance. Halvor implemented the object detection using radar imaging for use in the obstacle avoidance algorithm.

On this project, he worked mainly with technologies such as the ROS framework, C++, OpenCV, Azure boards and repos, as well as position and velocity estimation using Kalman filters. Halvor both worked on a team of 5 people, and cooperated with the other groups on the project.

Competencies: C++, Scrum, DevOps, Multidisciplinary team, OpenCV, Robotics, Project Planning, Git

Customer: Norwegian University of Science and Technology (NTNU)
Assignment: Project - Real Time Elevators
Role: Developer
Duration: 01.2019–05.2019

Project description: As part of the subject TTK4145 - Real-time programming, Halvor carried out an elevator project where the goal was to program an arbitrary number of elevators to cooperate optimally over a given number of floors. A central part of the project was also to make the system fault-tolerant so that unforeseen events such as loss of power or network connection for one of the elevators did not affect functionality. Physical models of elevators with associated control panels were used. The lifts communicated over the network so that several units could work together. Logic for handling orders was implemented with the programming language Go and for the transfer of information over the network the protocol UDP was used.

Competencies: Golang, User Datagram Protocol (UDP), Real-time systems, Fault tolerance

Work experience

Sopra Steria	Software Engineer, DevOps	08.2021–present
Geilo Entreprenør	Construction worker	05.2020–08.2020
Kongsberg Maritime	Summer intern, developer	06.2019–08.2019
Norwegian University of Science and Technology (NTNU)	Teaching Assistant	01.2018–06.2019
Lumenia AS	Sales representative	02.2017–12.2017
Retail House Norway AS	Promoter	03.2017–09.2017
The Norwegian Army	Military service, HMKG	07.2015–06.2016
Geilo Entreprenør	Construction worker	06.2014–08.2018
Liodden Camping	Web Developer	05.2015–05.2015
Ødegård Teigen Hytteutleie AS	Web developer	2014
Expert Geilo	Store employee	2012–2013

Work experience – details

Employer: Sopra Steria
Position: Software Engineer, DevOps
Duration: 08.2021–present

Halvor is employed as a Software Engineer in the software development division of Sopra Steria.

Employer: Geilo Entreprenør
Position: Construction worker
Duration: 05.2020–08.2020

The job consisted of construction work such as driving construction equipment, laying power and water lines, as well as developing plots.

Employer: Kongsberg Maritime
Position: Summer intern, developer
Duration: 06.2019–08.2019

Halvor worked on the summer project SmartShip in the "Autonomous Control" group. Together with a team of about 12 students, he developed an autonomous ship. A scaled-down model of the Yara Birkeland ship was equipped with algorithms for autonomous waypoint following and obstacle avoidance. Halvor's main responsibility during the project was implementing object detection using radar imaging.

Employer: Norwegian University of Science and Technology (NTNU)
Position: Teaching Assistant
Duration: 01.2018–06.2019

Halvor worked as a teachin assistant in Procedural and Object-Oriented Programming (C++) for two semesters (spring 2018 and spring 2019). He guided students attending the course and approved their assignments.

Employer:	Lumenia AS	Halvor worked with selling promotion to companies through advertisements in compendiums at NTNU.
Position:	Sales representative	
Duration:	02.2017–12.2017	
Employer:	Retail House Norway AS	Halvor worked as a promoter for various products for Retail House Norway
Position:	Promoter	
Duration:	03.2017–09.2017	
Employer:	The Norwegian Army	Halvor did his military service in His Majesty The King's Guard the year after high school.
Position:	Military service, HMKG	
Duration:	07.2015–06.2016	
Employer:	Geilo Entreprenør	The job consisted of construction work such as driving construction equipment, laying power and water lines, as well as developing plots.
Position:	Construction worker	
Duration:	06.2014–08.2018	
Employer:	Liodden Camping	Developed the website for Liodden Camping using the software Adobe Muse.
Position:	Web Developer	
Duration:	05.2015–05.2015	
Employer:	Ødegård Teigen Hytteutleie AS	Development of website (not current site) using Adobe Dreamweaver. Mainly with html and css.
Position:	Web developer	
Duration:	2014	
Employer:	Expert Geilo	Summer job in an electronics store the summer of 2012 and 2013.
Position:	Store employee	
Duration:	2012–2013	

Education

NTNU - Norwegian University of Science and Technology | 08.2016–06.2021 | Master of Technology
Halvor has a master's degree in cybernetics and robotics from NTNU with specialization in autonomous systems. Halvor's main interest has been to combine machine learning and control theory, and he wrote his master thesis about the use of machine learning in off-shore wind turbines.

University of California, Santa Barbara (UCSB) | 09.2019–03.2020 | Studies Abroad
Halvor spent his fourth year abroad at University of California, Santa Barbara. He took courses in machine learning, computer vision, nonlinear control theory, as well as subjects in other non-engineering fields.

Professional duties and positions

Volunteer UKA-17: Halvor volunteered during the UKA festival in 2017 where he worked as a bartender at Samfundet in Trondheim.	2017

Course participation

Kotlin for Java Developers	05.2023
Cyber Security Academy Foundation	11.2021
Presentation Techniques - Foundation	10.2021
Digital Presentation Techniques - Foundation	08.2021
Architecting on AWS - Amazon Web Services	08.2021
Java SE 12 Programming	08.2021
Learning assistant training (LAOS)	04.2019

77-853: MOS: Microsoft Office OneNote 2010	05.2014

Certifications

GitLab Certified CI/CD Associate	08.2023
Professional Scrum Developer I (PSD I)	05.2023
Professional Scrum Master I (PSM I)	01.2023
DP-100 Azure Data Scientist Associate	10.2022
AZ-204: Azure Developer Associate	09.2022
PRINCE2 Agile Foundation	07.2022
Certified Tester AI Testing (CT-AI)	05.2022
Confluent Kafka Fundamentals Accreditation	04.2022
DP-900: Azure Data Fundamentals	02.2022
AZ-900: Microsoft Azure Fundamentals	02.2022
AZ-900: Microsoft Azure Fundamentals	01.2022
REQB (IREB) Foundation Level Certified Professional for Requirements Engineering	10.2021
ISTQB Foundation Level Certification Agile Tester	10.2021
AWS Certified Solutions Architect - Associate	09.2021
ISTQB Certified Tester, Foundation Level	08.2021
77-853: MOS: Microsoft Office OneNote 2010	05.2014

Publications

Comparing deep reinforcement learning algorithms' ability to safely navigate challenging waters, Frontiers in Robotics and AI.	09.2021

Presentations and courses

Techday 2023: Testautomation and testdata at Statnett	04.2023
RUBIKS 2022: Differentially private synthetic data using deep learning	06.2022
Lightning Talk at Testdagen ODIN: How to generate representative synthetic test data at Statens Vegvesen	11.2021
Teaching Microsoft OneNote to high school students	05.2014

Languages

Norwegian	Native speaker
English	Fluent