Kristian Ekle

Fullstack developer

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Kristian is an engaged developer with a master's degree in computer science from NTNU, with specialization in Artificial Intelligence. Since his education, he has worked as a developer in various customer projects in Oslo. He has experience in developing both backend and frontend in complex data systems, including in industries such as "eID and trust services" and "transport and logistics."

Previous clients and colleagues would describe Kristian as a self-driven and versatile developer who is equally comfortable working with frontend, backend, infrastructure, CI/CD pipelines, and cloud platforms. As long as it meets the organization's needs, he is happy to contribute. Kristian enjoys delving into new technologies or tools - he is eager to raise his hand if something new needs to be learned or explored for the team to succeed.

Competency

Languages
Java, C#, Python, JavaScript, TypeScript

Frontend
React, Angular

Backend
Spring Boot, ASP.NET, Node.js, Flask

Database
SQL, PostgreSQL, SQLite, MongoDB, CosmosDB, DynamoDB, Redshift, LDAP, m.m.

Cloud Platforms
Azure, AWS

Mobile
Xamarin, Flutter, Android

Dev Ops
CI/CD pipelines, Git, ELK, Grafana

Infrastructure
Kubernetes, Elasticsearch, Logstash, Nginx, Linux, Kafka

JavaScript/TypeScript
Much experience with JavaScript from education and from client projects. Good control over frameworks like React, Angular, or Express.js and the use of tools like Webpack, npm, linters, and automated tests.

Java
Experience with Java from NTNU and at Visma and Buypass. Good knowledge of Spring Boot, for instance, to write microservices and backends with various purposes, such as APIs, authentication, proxy, database, etc.

C# & .NET
Previously worked in a C#/.NET department at Bouvet and contributed significantly to the professional community around Azure and Microsoft technologies. Familiar with C#, .NET, nuget, and Azure from several projects at Sporveien and Avinor. Has, among other things, delivered backend APIs, Windows services, and calculations in Azure Functions using C# and .NET Core.

Python
Has used Python in several projects at Sporveien for machine learning and optimization tasks, APIs, and calculations in AWS Lambdas and Azure Functions. He also has experience with Django, Flask, and Bottle from hobby projects and during his studies, particularly for website development for student organizations/NTNUI groups.

Infrastruktur og CI/CD
Good handle on developing CI/CD pipelines, whether through scripts in Jenkins, in Azure DevOps, or in GitLab pipelines. Often takes responsibility for deploying applications and has experience with launching solutions on-premises or in the cloud using Docker/Kubernetes.

Projects

Buypass - Buypass FIDO2 Identity Services
October 2020 – May 2023 | Fullstack developer

Buypass developed a solution for secure login and user management at the highest security level, eIDas high, with FIDO2 technology. The solution is now used by several Buypass customers in the municipal, pharmacy, and health sectors. It is also possible to use the solution for logging into public services like Nav and the Tax Administration through the ID portal (ID-porten).

Kristian worked on several aspects of the Buypass FIDO2 Identity solution, including infrastructure, service layer, and as the main person responsible for frontend applications. He developed several applications and microservices in Spring-boot, self-service solutions, back-office solutions, and login screens for, among others, the ID portal in web technologies. He also wrote Logstash pipelines that sent messages from Kafka to ElasticSearch.

Contributions and Technologies:

- Wrote backend solutions and microservices in Spring-Boot.
- Developed web apps and self-service solutions in consultation with UX and business.
- Participated in the solution design of the event system and multi-tenant version of FIDO2 identity services.
- Wrote solutions that published, consumed, monitored, and visualized events and audit logs in Kafka.
- Pilot project for deploying applications to Kubernetes which was later adopted.
- Developed a JavaScript solution that integrated with webauthn and ctap for authentication with physical FIDO2 keys.
- Participated in audit processes to get Buypass FIDO2 Identity services certified at the highest level, eIDAS high.

Spring-Boot, **Kafka**, **Logstash**, **ElasticSearch**, **JavaScript, TypeScript, FIDO2**, **React**, Spring-security, LDAP, Docker, Kubernetes, Azure, Azure AD, Azure Blob Storage, WebAuthn, Web Components, HMTL/ CSS, Kibana, Prometheus, Grafana, **Kubernetes**, Grafana, Prometheus, Traefik , Rancher2, Gitlab, CI/CD pipeline, Git, Maven, Node.js, Webpack, NPM, Swagger

Buypass - ID control with Digital Passport Reader
April 2020 - October 2020 | Fullstack developer

To obtain an electronic ID, it is necessary to undergo an ID check where an operator verifies a passport. This requires physical attendance. Especially during the coronavirus pandemic, there was a desire for a remote ID check solution. Commissioned by the Digitalization Directorate, Buypass began developing a method for users to authenticate themselves to public services through a digital passport reader.

Kristian was engaged by Buypass to join as a full-stack developer in a team with a lot of expertise in security and cryptography. He was responsible for developing an application in React for ID verification of users and payment, as well as the corresponding API for login with OIDC, communication with backend services, and integration with the Nets Passport Reader.

Contributions and Technologies:

- Developed a web app in React for ordering, ID verification, and payment of electronic IDs.
- Wrote API and services in Spring-Boot.

- Created CI/CD pipelines and configured Docker, Docker-compose, traefik, and nginx for deployment and security.

React, **JavaScript**, **TypeScript**, **Spring-Boot**, Spring-security, Docker, Docker-compose, Traefik, HMTL/ CSS, Kibana, Grafana, Rancher2, Gitlab, CI/CD pipelines, Git, OIDC, Maven, Node.js, Webpack, NPM

Avinor - Digital Information center
October 2019 – April 2020 | Fullstack developer

Avinor had a need to assist the employees at the information desks at their airports and saw that the most frequently asked questions could be solved digitally, which would reduce the resource needs at the information desks. Kristian was part of the team tasked with solving this problem; the first phase was to set up a digital information kiosk for Oslo Airport. In the project's phase 2, the solution was rolled out to other Norwegian airports.

Kristian worked in an agile team consisting of three developers and a designer that moved quickly, with frequent feedback from the client and end-users. The solution consisted of web applications in React, a backend in C# ASP.NET Core, and used several services from Azure for login, data persistence, and deployment.

Contributions and Technologies:

- Developed C# ASP.NET Core backend with Entity Framework for Azure CosmosDB.
- Developed an info kiosk in React with touch support, including maps, timetables, and article systems.
- Developed a back-office solution in React with the capability to edit content in the info kiosk per physical unit, with free-text editing in Markdown and drag-and-drop functionality.
- CI/CD pipelines and configuration of Docker for deployment to Azure Kubernetes.
- CI/CD pipeline that provisioned necessary infrastructure in Azure as infrastructure as code (IaC).
- Also contributed to the selection of hardware, 3D printing, and setup of the physical info kiosk.

React, **JavaScript**, **TypeScript**, **C#, ASP.Net**, React AAD MSAL, Lerna, Webpack, npm, Entity Framework, HMTL/ CSS, Docker, Azure, Azure Blob Storage, Azure Kubernetes, Azure CosmosDB, Azure AD, Microsoft Intune, Azure DevOps, CI/CD pipelines, Git, GraphQL, nuget, Application Insights, UU, WCAG

Sporveien - Geometry Train
December 2018 - January 2020 | Architect, Fullstack developer

The Geometri train is a metro carriage equipped with over 30 sensors that measure values for, among other things, track width, curve, wind skewness, accelerometer, and more. With regular use, the train covers the entire track network every 2 weeks. Sporveien established a team to retrieve, decode, and analyze this data with the aim of determining maintenance needs for the track network. The data from the Geometri train will enable those responsible for maintaining Sporveien's infrastructure to observe the trend of errors, receive alerts if a sensor captures readings outside threshold values, and view average speeds across the entire rail network.

Kristian was involved in this project as the sole technical resource. He was responsible for solution design and implementation of the software solution for the system and developed various services for data processing on servers and in the cloud to decode, transform, and transfer data to different systems.

Contributions and Technologies

- Developed C# services to transfer sensor data from the train via the 4G network to AWS S3.
- Utilized Python to convert sensor data from a proprietary binary system employed by the sensor manufacturer.

- Authored and set up AWS Lambdas to act on events, transforming the data.
- Created ETL pipelines in Databricks interfacing with AWS DynamoDB and AWS Redshift for processing vast volumes of data.
- Formulated a solution design for the system's architecture, which was presented and accepted in the Architecture Forum.
- Developed a React web app for the visualization of sensor data.
- Regularly visited the workshop hall to troubleshoot the system on the train car.

Python, **C#, .NET Core, AWS**, **Databricks, React, JavaScript, TypeScript,** Python Flask, AWS IAM, AWS S3, AWS DynamoDB, AWS Redshift, AWS Lambdas, Tableau, Big Data, Git, nuget

Sporveien – Predictive maintenance of track switchers
Okt 2018 - mar 2019 | Data Scientist, Fullstackdeveloper

Sporveien purchased and installed new track switches equipped with a sensor for measuring and reporting precise power consumption at high resolution. The plan was to investigate whether it was possible to predict maintenance needs based on this data.

Kristian was hired to prototype a solution that could use this data to analyze, visualize, and alert if the recorded power draw on track switches in the subway network was out of the ordinary and indicated a need for maintenance. He developed a solution using Angular7 and a Python Flask backend for visualization hosted from Azure. Analysis and data processing were done in WebJobs, Azure Function, Blob storage, and Azure CosmosDB.

Contributions and Technologies:

- Wrote C# code executed in Azure Functions and WebJobs that utilized algorithms from signal processing and statistics to analyze track switches.
- Developed a system in Azure Functions that alerted if switches deviated from the norm.
- Developed a web app for visualizations, deployed using CI/CD pipelines to Azure.
- Visited rail tracks to gather data for scenarios where track switching failed.

Angular, **JavaScript**, **Python**, **C#**, **TypeScript**, **Azure**, pip, HTML/CSS, Azure DevOps, Git, Azure Functions, Azure Webjobs, Azure CosmosDB, Azure Blob Storage, NPM, Webpack

Sporveien - IVO - Fleet management, train shunting and parking
September 2017 – October 2018 | Data Scientist, Developer, Architect

Managing and scheduling subway cars for regulated inspection at the Ryen subway workshop in Oslo is a complex manual task. This responsibility requires expertise in the domain, as subway cars must be inspected based on various maintenance needs stemming from both time elapsed and miles driven. For economic reasons, it's desirable to maximize the number of kilometers a car can travel before needing an inspection, as unused kilometers represent significant costs over the vehicle's lifetime. This becomes a challenging task due to the intricate combination of factors affecting a car's condition, including route choice, parking structure, unforeseen maintenance, and cleaning.

The project named IVO (Individual Management of the Vehicle Fleet) initiated a preliminary study to explore the potential of developing digital tools to optimize the planning of inspections and the management of subway cars. Kristian was engaged as a developer and data scientist to investigate whether AI/ML techniques could address this challenge. The preliminary study resulted in a Proof of Concept (PoC) that laid the foundation for future project proposals and patent applications.

Kristian worked on multiple aspects of the system and was, for a prolonged period, the sole developer on the project. The issue proved to be very complex, leading to its breakdown into several sub-problems. These were addressed by custom optimization routines written as Evolutionary Algorithms in Python and reinforcement learning in TensorFlow. Furthermore, he worked on integrations with core systems to extract essential information like mileage and route plan.

Contributions and Technologies:
- Developed evolutionary algorithms in Python to devise route allocations to meet optimal workshop dates.
- Created a "game" of the rules for ranking at the depot and employed reinforcement learning to train models that learned to rank trains to meet allocated route choices. Models were trained over extended periods on AWS EC2.
- Gave presentations on the system at "Make Data Smart Again" events.
- Authored reports and developed architecture for a full-scale project, which was used in a patent application.
- Several visits to the subway hall to understand the domain.
- Utilized Tkinter GUI for visualizing models as they ranked and moved trains.

Tenosflow, Python, AWS EC2, pip, Hastus, AWS, IFS, VSTS (Azure DevOps), CI/CD Pipelines, Git, Multiobjective evolutionary algorithm, optimailsering, modellering, AI/ML, Raylib, Tkinter, Linux Debian

Tine - Chatbot for recipe recommendations
August 2017 - September 2017 | Developer

In the context of further development of the website and recipe database for Tine, there was a desire to explore the possibility of using ChatBot technology to create a smart chatbot that could interact with customers to suggest food recipes from the recipe database, Smartsans, based on their preferences and available ingredients.

Kristian was hired as a developer to work on the recipe suggestion chatbot in Microsoft Bot Framework, which was to be integrated with Tine Matsans' recipe database. The bot was deployed on Azure and could be integrated with various clients, such as Slack, Skype, or websites.

Contributions and Technologies:

- Used and deployed a chatbot created in Microsoft BotFramework, trained with dialogs in wit.ai.
- Retrieved recipes and image information from GraphQL to be displayed in the chat dialogue.

Node.js, JavaScript, TypeScript, Microsoft Bot Framework, Azure, Azure App Service, NPM, Git

Visma - Visma AutoPay
Jun 2015 - Mai 2017 | Developer

AutoPay is a fully automatic payment service that handles all incoming and outgoing payments for an unlimited number of customers. All customers using Visma's financial system can utilize Visma AutoPay for automatic transportation of payment data both ways between the accounting program and the data recipient (for example, BBS, DnB NOR, Nordea, or Fokus Bank).

Kristian worked as a developer in Visma Autopay in a team of 12 people; he started in the team during a summer internship to explore the possibility of modernizing a Java MVC solution using Angular.js. It was decided to proceed with a full-scale implementation, and Kristian continued in a part-time position alongside his master's degree at NTNU.

Contributions and Technologies:

- Successfully carried out a PoC (Proof of Concept) of the new frontend in Angular.
- Implementation of the new frontend and the associated API that replaced the Java MVC solution.

Angular.js, JavaScript, Java, Jira, Maven, Subversion, Git, Scrum, Kanban, HTML/CSS, SASS, SCSS, Grunt, Grunt, MariaDB, Java-JDBC

Direktoratet for forvaltning og ikt (difi) - ID-Porten eID, Doffindata og eLæring

June 2014 – August 2014 | Systems developer

The Directorate for Management and ICT (Difi) annually admits summer students with relevant ongoing education from data-related courses at universities and colleges in Norway for "Dificamp". Dificamp provides the developers at Difi with extra capacity to test new technologies or to work on solutions that there otherwise isn't time for.

Kristian worked during the summer of 2014 at Difi in Leikanger. He worked on three different applications and systems over the course of 2 months:

- An e-learning platform in PHP Moodle for courses and e-learning for state use.
- Indexing and making available Doffin data (data on public tenders) in Elasticsearch and Spring Boot.
- Android app for integrating ID-porten MinId as an eID.

Contributions and technologies:

- Developed custom plugins for the e-learning platform Moodle for issuing diplomas/verifications after completing courses.
- Indexed 10 years of Doffin data in Elasticsearch, which was made available with an API in Spring Boot.
- Developed a PoC for ID-porten eID on Android that stored authenticated users after logging in with ID-Porten.

Java, **Spring-Boot**, **Android, PHP**, Moodle, HTML/CSS, Git, Elasticsearch, Kanban, Javascript, MySQL, Maven

Education

Master of Science - NTNU Gløshaugen
August 2015 - Juni 2017
Master of Science in Informatics (MSIT), specialization Artificial Intelligence

Bachelor of Science - NTNU Gløshaugen
Aug 2015 - jun 2017
Bachelor of Science in Informatics (BIT)

Work

Fyr Consulting – IT Consultant
Apr 2020 – d.d.

Bouvet – IT Consultant
Aug 2017 – April 2020

Visma Software - Developer
June 2015 - May 2017

Publications and presentations

NCD Oslo: AI/ML
Workshop: AI/ML for developers
Jul 2018

Make Data Smart Again
Presentation: AI/ML and optimaisation in Sporveien prosject IVO
Jun 2018

Yggdrasil: AI/ML
Presentation: AI/ML for designers
Apr 2018

Self-Modifying Dynamical Systems for Reservoir Computing
Master's thesis: Artificial Intelligence NTNU
Jun 2016

Languages

Norwegian - spoken / written
English – spoken / written

References

Project	Name	Description	Contact
Buypass AS	Terje Megård	Team Lead i team Proff	Phone: 920 47 371 Email:terje.megard@buypass.no
Bouvet and Avinor	Markus Renton Skallist	Bouvet and team lead i Avinor	Phone: 919 14 177 Email: markus@skallist.no

Sporveien	Johan Blomberg	Sporveien in projects Track switcher and Geometry train	Phone: 481 94 916 Email: johanblomberg@gmail.com

Other prosjekter

Fyrconsulting.no: Website
September 2023 | Web developer

krekle.no: Website
March 2020 | Web developer

Google Play App: Farm animals – Flutter Android app
Jan 2015 - Jun 2015 | Mobilutvikler

Reuasable Quiz study app – Xamarin Mobile app
Jan 2015 - Jun 2015 | Mobilutvikler, Fullstackutvikler

NTNU i Dans – webportal
Jan 2015 - Jun 2015 | Fullstack developer

NTNUi Dance needed a new web portal with an accompanying CMS for managing content, events, training sessions, users, instructors, instructor certification, and payment of training fees. The project was a customer-driven bachelor's project where Kristian worked in a team of 8 people.

The web portal was developed using the Flask framework in the Python programming language. The payment solution was created using the Stripe framework, and the database layer was developed using SQLAlchemy and PostgreSQL. Kristian maintained the project and operated it for NTNUi Dance for some time after completion.

www.ntnuidans.no

Contributions and technologies:

- Responsible for infrastructure, database design, and operation of the solution in DigitalOcean.
- Integrated with payment systems for payment of training fees with QR code verification.
- Designed and developed pages for user profiles and editing.
- Created a system for automatic generation of forms based on models that were used.

Python, Flask. PostgreSQL, **Javascript**, Jinja2, Nginx, HMTL/CSS, Git, SQLite

NTNUi Squash - web portal

Jan 2013 - Jun 2016 | Fullstack webdeveloper

Kristian was a board member of NTNUi Squash and therefore undertook the task of creating new websites with an accompanying back-office solution for managing content, events, online shops, and users.

The website was developed using the Flask framework in the Python programming language. Kristian was the sole developer on the project. He maintained it until 2016. www.ntnuisquash.no

Contributions and technologies:

- Created a CMS system from scratch in Python Flask.
- System for managing users.

Python, Flask. MySQL, **Javascript**, Jinja2, Nginx, HMTL/CSS, Git, SQLite