Georgi Tancev

MSc ETH

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Experience

01/20– **Research Scientist**, *Swiss Federal Institute of Measurement Technology (METAS)*, Bern.

- Managing a smart city project funded by Innosuisse (Swiss Innovation Agency) with the objective of developing a novel low-cost sensor system for air quality monitoring within the artificial intelligence/internet of things domain (36779.1 IP-ENG).
- Developing, implementing, and evaluating machine learning algorithms for prediction (regularized linear regression/neural network, random forest) and anomaly detection (local outlier factor, one-class support vector machine, isolation forest) from raw sensor data in Python using Scikit-Learn, TensorFlow, PyMC3.
- Conducting market research, interacting with original equipment manufacturers, designing experiments from published data (full/fractional factorial, central composite, Box-Behnken), and assessing component parts with respect to performance (Monte Carlo/laboratory experiments).
- Organizing and moderating project meetings, giving presentations, and writing/reviewing (scientific) reports and publications.
- Analyzing experimental data as in-house data science consultant for different laboratories/external collaborators.
- Contributing to the digital transformation and establishing new services for customers.

09/19–11/19 **Data Scientist**, *University of Basel*, Basel.

- Implementing, training, and evaluating deep learning algorithms for image segmentation (MD-GRU, V-Net) in Python using TensorFlow within high performance computing environments.
- Analyzing volumetric medical imaging data, i.e., segmentation of multiple sclerosis lesions in human brain scans generated by magnetic resonance imaging.

04/18–04/19 **Data Scientist**, *University Children's Hospital Basel*, Basel.

- Developing standardization procedures for a novel medical device based on breath analysis.
- Analyzing and visualizing clinical/omics data with methods such as supervised/unsupervised machine learning (principal component analysis, t-distributed stochastic neighbor embedding, random forest), parametric and non-parametric statistical tests (t-test, Wilcoxon rank-sum/signed-rank test) and analysis of variance (F-test, Kruskal-Wallis test), i.e., mining biomarkers/risk factors and statistical modeling in MATLAB and Python using SciPy, Pandas, Scikit-Learn.
- Deploying machine learning models using Flask, Angular, Docker.
- Reporting results and writing scientific publications.

05/17–03/18 **Postgraduate**, *Novartis*, Basel.

- Programming, modeling, and simulating manufacturing processes in Python using NumPy, SciPy.
- Developing crystallization processes of early-phase drug substances in wet-lab.
- Designing/drawing manufacturing inventory using FreeCAD.

01/14–04/17 **Tutor**, *Forum 44*, Baden.

- Teaching math and natural sciences as well as coaching of adolescents in one-to-one or group lessons.

Education

09/15–03/17 **MSc ETH in Chemical and Bioengineering**, *Swiss Federal Institute of Technology*, Zürich.

09/11–08/15 **BSc ETH in Chemical Engineering**, *Swiss Federal Institute of Technology*, Zürich.

08/07–06/11 **General Qualification for University Entrance**, *Cantonal School*, Baden.

08/96–06/07 **Elementary School**, Baden.

Certifications

01/21 **Digital Transformation**, *Boston Consulting Group (BCG)*.

04/20 **Bayesian Methods for Machine Learning**, *National Research University - Higher School of Economics*.

03/20 **Algorithms and Data Structures**, *University of California, San Diego*.

02/19 **Deep Learning**, *deeplearning.ai*.

12/18 **Machine Learning**, *Stanford University*.

11/18 **Project Management for Researchers**, *University of Basel*, Basel.

Projects

01/21–02/21 **design-R**.
- design-R is a web application to create designs for laboratory experiments; it was implemented in Python using Streamlit and pyDOE (*design-r.herokuapp.com*).

01/20–12/20 **metas-learn**.
- metas-learn includes Python implementations of classical machine learning algorithms, e.g., gradient descent, back-propagation, expectation-maximization (*github.com/gtancev/metas-learn*).

05/19–09/19 **openPK**.
- openPK is an attempt to provide physiolocigally based pharmacokinetic modeling to a broader audience. Deterministic pharmacokinetic models from the academic literature have been implemented in a Python/Flask back-end, whereas the front-end has been built in TypeScript/Angular (*openpk.herokuapp.com*).

Skills

Expert Knowledge

- Algorithms
- Data Science
- Engineering
- Life Sciences
- Machine Learning
- Mathematical Modeling
- Numerical Simulation
- Programming
- Product Development
- Project Management
- Research
- Statistics

Tools and Technologies

- Git
- LaTeX
- MATLAB
- Python
- R
- Unix

Interpersonal Skills

- Coaching
- Communication
- Critical Thinking
- Negotiation
- Problem Solving
- Teamwork

Languages

- English
- French
- German
- Macedonian

Interests

- Computer Science
- Endurance Sports
- Literature
- Photography
- Politics
- Technology

Publications

Precision Medicine

- Gotta, V.; Tancev, G.; *et al*. Identifying Key Predictors of Mortality in Young Patients on Chronic Haemodialysis: A Machine Learning Approach. *Nephrology Dialysis Transplantation* **2021**, *36*, 519.
- Singh, K.; Tancev, G.; *et al*. Standardization Procedures for Real-Time Breath Analysis by Secondary Electrospray Ionization High-Resolution Mass Spectrometry. *Analytical and Bioanalytical Chemistry* **2019**, *411*, 4883.

Smart City

- Tancev, G.; Pascale, C. The Relocation Problem of Field Calibrated Low-Cost Sensor Systems in Air Quality Monitoring: A Sampling Bias. *Sensors* **2020**, *20*, 6198.