

# DENIS GOSALCI

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## EDUCATION

### Friedrich-Alexander-Universität Erlangen-Nürnberg

Master of Science (M.Sc.) Computer Science *GPA: 2.2*

Erlangen-Nürnberg

2021-10-01 - 2025-09-30

### Technische Hochschule Nürnberg Georg Simon Ohm

Bachelor of Science (B.Sc.) Applied Mathematics and Physics *GPA: 1.7*

Nuremberg

2017-10-01 - 2021-09-30

### Lothar-von-Faber-Schule, Nürnberg

Technical College Entrance Qualification Technical Track *GPA: 3.2*

Nuremberg

2015-09-01 - 2017-07-07

## EXPERIENCE

### Fraunhofer IIS

*Master Thesis Student*

Nuremberg

2024-04-01 - 2024-09-30

- Developed encoder-based Transformer model for NBA tracking data prediction
- Proposed CNN-based relative time embedding for improved temporal modeling
- Integrated contextual information (player ID, team ID, roles) into model architecture
- **40% lower prediction error** vs linear baseline; outperformed LSTM in short-horizon predictions
- Conducted systematic evaluation with distance and angular error metrics and robustness analysis

### Fraunhofer IIS

*Student Research Assistant*

Nuremberg

2022-05-01 - 2025-03-31

- Built preprocessing pipeline for multi-agent NBA tracking data with sliding window and normalization
- Designed and implemented full Transformer pipeline: architecture, training, hyperparameters, evaluation
- Created technical documentation and integrated model into shared publication pipeline
- Results published as paper: [10.1109/PLANS61210.2025.11028353](https://arxiv.org/abs/10.1109/PLANS61210.2025.11028353)

### FAU Erlangen-Nürnberg

*Master Project – Innovation Lab*

Erlangen

2023-10-01 - 2024-02-29

- Maintained Git repository and implemented backend system for First Order Motion Model
- Integrated AI model into touchscreen application with real-time performance optimization
- Delivered technically stable deepfake pipeline for public demonstration
- Collaborated in Scrum team with cross-functional development

### Fraunhofer IIS

*Bachelor Thesis Student*

Erlangen

2021-02-01 - 2021-07-31

- Implemented LMU, LSTM, and GRU architectures in TensorFlow/Keras
- Trained models on permuted sequential MNIST dataset
- Designed autoencoder for multi-signal reconstruction from communication channels
- Confirmed superior temporal memory capacity of LMU compared to standard RNN cells

### Fraunhofer IIS

*Intern – RF Frontend Development*

Erlangen

2020-08-01 - 2020-12-31

- Developed automated Python test framework for IoT device testing
- Conducted RX/TX tests on 100+ devices including signal strength, DC bias, image rejection
- Applied Fourier transforms, IQ demodulation, and noise figure calculations
- Improved image frequency suppression through systematic IQ tuning

## SKILLS

### Python:

### Machine Learning Frameworks:

### Model Architectures:

### Time Series & Forecasting:

### Programming Languages:

### Development Tools:

### Infrastructure & Deployment:

### Scientific Computing:

Programming, Machine Learning, Data Processing, Automation

PyTorch, PyTorch Lightning, Keras, scikit-learn

Transformers, LSTM, GRU, CNNs, Autoencoders

Movement prediction, Temporal modeling, Sequence analysis

C#, Matlab, Shell, PowerShell, SQL

Git, JupyterLab, PyCharm, Visual Studio Code, LaTeX

Flask, Docker, SLURM, Linux CLI, SSH, tmux, nginx, Apache2

NumPy, Signal Processing, Time Series Analysis, Statistical Modeling