

## **EU Funding Short CV**

### **EP PerMed / CARMEN 2026 Application**

#### **Dr. Tuğçe Öznacar**

Assistant Professor of Biostatistics & Clinical AI Researcher

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**Nationality:** Turkish (Eligible Associated Country Participant)

## **1 Professional Summary**

I am a Biostatistician and AI researcher specialising in predictive modelling, deep learning, imbalanced learning strategies and explainable AI (XAI) for clinical applications. My work aims to bridge algorithmic performance with clinical utility, focusing on models that are fair, interpretable, generalisable and deployable in real-world healthcare environments.

I work with clinical datasets, biomedical measurements and medical imaging, applying optimisation, model benchmarking and reproducibility standards aligned with personalised medicine frameworks. I also focus on clinically meaningful explainability outputs and their integration into decision-support workflows (XAI → CDSS translation).

For the EP PerMed JTC 2026 (CARMEN) programme, I intend to contribute as a Work Package Leader for predictive modelling, explainability and validation.

## **2 Key Expertise & Skills**

### **Machine Learning & Statistical Modelling**

- Logistic Regression, SVM, Random Forest, XGBoost, LightGBM
- Feature selection, calibration, internal/external/temporal validation
- Hybrid and ensemble modelling (stacking, model fusion, weighted voting strategies)

## Deep Learning for Medicine

- CNNs, MobileNetV2, ResNet, Grad-CAM
- Multimodal fusion (imaging + clinical variables)

## Model Optimisation & Class Imbalance

- Hyperparameter tuning (Grid, Random, Bayesian, Optuna), Memetic
- SMOTE, Borderline-SMOTE, ADASYN, cost-sensitive learning

## Explainable AI (XAI) & Trustworthy AI

- SHAP, LIME, ICE plots, counterfactual reasoning
- Clinician-oriented interpretability & reporting

## Research Implementation & Standards

- Workflow reproducibility, model benchmarking
- TRIPOD-AI (prediction model reporting),
- CONSORT-AI (clinical trial reporting),
- DECIDE-AI (AI decision-support evaluation) alignment
- Emerging capacity for multi-centre clinical data integration

## 3 Selected Publications

- Öznacar T. et al. (2025). *Advanced skin cancer prediction using MobileNetV2 deep learning and optimisation techniques*. **Scientific Reports (Q1)**.
- Öznacar T. et al. (2025). *Prediction of early diagnosis in ovarian cancer patients using ML with Boruta feature selection*. **Life (Q1)**.
- Öznacar T. et al. (2025). *Survival prediction in brain metastasis using hybrid machine learning approaches*. **Brain Sciences (Q3)**.

- Öznacar T. et al. (2024). *A machine learning approach to early detection and malignancy prediction in breast cancer*. **IJCESEN**.
- Öznacar T. et al. (2024). *Heart failure prediction using SHAP, LIME and ICE for interpretability evaluation*. **IJCESEN**.

## 4 Research Experience & Roles

Project	Role	Year
Machine learning for cancer prediction and imaging	Lead Researcher	2022–2025
TÜBİTAK 3501 Research Grant	Researcher	2023–2025
Diagnostic tool validation & model interpretability	Method Lead	2023–2025

## 5 Teaching & Mentoring

- Machine Learning, Biostatistics, Deep Learning, Research Methods
- Clinical AI, interpretability frameworks, model evaluation

## 6 Proposed Role in Project

Work Package Leader – Predictive Modelling, Multimodal Deep Learning, Explainability & Validation