Mahshad Sarikhani, MD

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To: Prof. Kather and Team, Kather Lab (Department of Clinical AI, TU Dresden / EKFZ)

Re: Application for Guest Researcher (open to PhD)

Dear Prof. Kather and Team,

I am an MD and abdominal MRI researcher applying for a **Guest Researcher** position (open to a PhD pathway). After my short interview with **Dr. Neishabouri on August 4**, I am confident my clinical perspective and hands-on ML/DL skills can contribute meaningfully to your multimodal and agentic AI work. I am **deeply passionate** about this interdisciplinary field and a **committed lifelong learner**. I taught myself ML/DL and continue to expand my skills to bridge clinic and code.

Beyond clinical insight, I work **end-to-end** across the ML stack. I write and maintain Python for research (pandas, NumPy, PyTorch, scikit-learn), build clean data pipelines and loaders for MRE, reports, and labs, and implement strong tabular/text/imaging baselines. I frame problems and design labeling schemas, train and tune models, add calibration and uncertainty estimates, and design evaluation that reflects clinical decisions (AUROC/PR, ECE, decision curves, subgroup robustness). I also lead reader-style error analyses with clinicians and package results into reproducible code, experiment reports, and model cards others can run and extend.

I have implemented what I have learned on real clinical data. Recently, I built **MRI biomarker-based activity scores** in IBD and co-led analyses culminating in an **ECCO 2025** poster on quantitative MRE motility. These projects strengthened my problem framing, reproducible baselines, and cross-functional communication with clinicians and engineers.

Proposed contribution (brief): I propose a *clinically grounded multimodal IBD activity model* that fuses MRE images with labs and radiology reports. I will ship strong tabular/text/imaging baselines and **fine-tune compact, pretrained encoders** rather than training from scratch (e.g., established vision backbones for images and a clinical BERTclass encoder for text). **Where licensing permits, I will integrate available external datasets with our internal cohort** to improve coverage and robustness, using site-aware splits and simple harmonization to avoid leakage. A lightweight cross-attention fusion will follow, with calibration and decision-curve reporting to show where the model is truly useful. *Why it matters:* activity assessment drives concrete choices (scope/no scope, escalate therapy, adjust monitoring).

Data readiness: I have access to MRE exams, reports, and clinical data from **two Tehran centers**. I am curating two synchronized slicesradiology reports and MRE images. The reports subset is structured; an imaging subset is sequence-mapped and quality-checked. The remaining step is linkage across exams, labs, and reports to finalize a single multimodal cohort, which I can complete efficiently within your compute and code-review standards (all work subject to IRB/data-sharing rules).

Logistics: I can start within 48 weeks of a formal offer, subject to visa processing, and can align with your timeline. I will require **visa/work sponsorship** and am happy to proceed via the standard German work permit or EU Blue Card routes. I am open to structuring this as a Guest Researcher role or a PhD track if that better fits the lab.

I would welcome the chance to contribute to ongoing lab projects while building this clinically grounded multimodal benchmark within your environment.

Sincerely,
Mahshad Sarikhani, MD