

## Statement of Purpose

Applicant: Mahboobeh Fathollahimiragha

Objective: PhD in Computational Linguistics/Natural Language Processing

Focus: Low-Resource NLP, Linguistic Equity, Cross-Lingual Transfer Learning

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### 1. Personal Motivation: A Journey from Linguistic Marginalization to Technological Empowerment

My commitment to computational linguistics is rooted in my personal experience as a native speaker of Kurdish and Laki languages in Iran. Witnessing first-hand the systemic marginalization and digital extinction threat facing these rich linguistic heritages ignited my determination to bridge the gap between technological advancement and linguistic justice. I believe computational linguistics is not merely an academic discipline, but a powerful tool for cultural preservation and empowerment of underserved language communities.

### 2. Academic & Research Vision

I aim to pursue a PhD to develop novel, equitable computational methods and resources for critically low-resource languages, with a primary focus on the Iranian language family. My proposed research agenda includes:

- **Pioneering NLP Tools:** Creating the first comprehensive, open-source NLP toolkit for Kurdish and Laki dialects
- **Cross-Lingual Bridge Models:** Designing novel transfer learning architectures using Arabic as a linguistic bridge
- **Culturally-Aware AI:** Developing evaluation frameworks sensitive to cultural context and linguistic nuances
- **Community-Centric Applications:** Building practical digital tools to empower diaspora and native speaker communities

### 3. Unique Qualifications & Preparedness

I possess a rare combination of skills for this mission:

- Linguistic Expertise: Native proficiency in Kurdish (Sorani, Kurmanji) and Laki, plus advanced Arabic and Farsi
- Technical Foundation: Practical skills in Python, Machine Learning, and modern NLP frameworks
- Proven Resilience: Discipline and perseverance honed as a national martial arts champion
- Deep Cultural Context: Lived understanding of the sociolinguistic landscape and preservation needs

#### 4. Proposed Technical Methodology

My research will employ:

- Low-Resource NLP Techniques for model training with minimal data
- Multilingual and Cross-Lingual Transfer Learning
- Unsupervised and Semi-Supervised Learning
- Community-Sourced Data Collection

#### 5. Long-Term Impact & Conclusion

My long-term vision is to transform linguistic preservation from grassroots activism to scalable technological innovation. Developing robust NLP for Kurdish and Laki will serve as a blueprint for other low-resource languages globally. This work sits at the intersection of AI ethics, digital humanities, and equitable technology.

I am seeking a PhD program and advisors whose work addresses bias, fairness, and NLP for underserved communities. I am confident that my unique background, deep motivation, and technical skills will allow me to become a productive and impactful member of your research team.