

Statement Of Purpose

Precog, IIIT-H

26th February 2025

Greetings Precog Folx!

I am writing to express my interest in working with the team at Precog as a research assistant. I was introduced to Precog and their work in my bachelor days at IIIT-Delhi (CSSS), where PK was visiting faculty. My interest lies in the intersection of computational linguistics and social sciences, particularly in understanding how language encapsulates cultural histories and evolves over time. With the recent surge in LLMs, I am also interested in learning how cutting-edge LLM technologies can be tailored for Indic languages to make them more accurate, inclusive, and accessible. That said, I come with an open interest and passion to explore all areas of Deep Learning and LLM research with Precog.

Over the past year, I've virtually attended the Precog Paper Reading sessions (tried to be as regular as possible) – I realised that having a community of researchers to discuss exciting research was a great space to incubate my passion for research, even while working full time. It has given me the confidence to continue learning and sharing my insights, even if they may seem obvious. In some ways, it has fuelled my resolve to keep pursuing research.

I've also been in touch with an ex-researcher/MS student at Precog, Anmol Goel, who guided me into the field of LLM research at Precog. Anmol's work also introduced me to the field of fairness, bias and ethical alignment in AI: which is a growing topic of discourse with the widespread use of LLMs. I believe that work on correcting this bias is required so as to not exponentially reproduce cultural discrimination/bias that has propagated through the years. A paper by Precog's researchers on legal safety, *InSaAF* is a great checkpoint for how these biases make so-called "state-of-the-art" LLMs unreliable to be used from a legal standpoint.

I have also interacted with the Precog team's work on optimizing LLMs for low-compute environments and their innovative strategies to enhance efficiency. The distillation (teacher-student knowledge passing) process is also fascinating to me. LLMs are not only made accessible on a large scale but also available on secure local machines. Research in accessibility of AI also facilitates the inclusion of underrepresented languages and knowledge systems.

The Precog Paper Reading sessions have introduced me to the world of Knowledge Graphs and GNNs. While I'm still exploring and learning new stuff on the topic, I can already imagine how

powerful KGs and GNNs can be if efficient transferability of knowledge between KGs is made possible.

Through my Bachelor's in Computer Science and Social Sciences at IIIT-Delhi, I have ~2 years of research experience working on two separate projects under Dr Pravesh Biyani, Dr Sonia Ray and Dr Jainendra Shukla (refer to CV). I have worked on several Machine Learning and Deep Learning projects as coursework. Through my industry experience at Oracle, I have gained crucial teamwork and time-management skills, and possess an in-depth knowledge of working with very large databases. Recently I have also worked with multilingual NLP and optimizing HuggingFace models using TensorRT engines (refer to CV).

It would be an honour to work at Precog. I would appreciate the opportunity to engage in a follow-up discussion to dive deeper into this topic and explore potential areas of collaboration. Looking forward to hearing from you.

Thanking you,

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