

# PaperPal: An AI-Powered Platform for Collaborative Reading and Discussion









Sakil Sarker<sup>1</sup>, Carlos Carrasco Garcia<sup>2</sup>, Patrick Hung<sup>2</sup>, Heidar Davoudi<sup>1</sup>, Ali Neshati<sup>1</sup>

sakil.sarker@ontariotechu.net, carlos.carrascogarca@ontariotechu.net, patrick.hung@ontariotechu.ca, heidar.davoudi@ontariotechu.ca, ali.neshati@ontariotechu.ca
¹Department of Science, Ontario Tech University; ²Department of Business and Information Technology, Ontario Tech University

#### **Problem & Motivation**

- Collaborative research paper reading is often fragmented across tools, and they are not designed for group learning.
- Researchers often struggle and find it really hard to stay synchronized during group reading sessions.
- Current AI tools lack integration and contextual awareness, which is needed for effective academic collaboration.

## **Objectives**

- Fascilitate collaborative research paper reading using annotation, AI-powered summarization, and discussion tools.
- Enhance group understanding and engagement through context-aware AI support and real-time interaction.

### **How It Works?**

- Upload & Sync
  - o Teams upload papers to a shared workspace
  - o Live collaboration: See others' edits instantly
- Annotate Together
  - o Highlight and comment simultaneously
  - o Color-coded by user with threaded discussions
- AI-Powered Insights
  - o Smart Help: Answers questions using the paper's
- Peer Support
  - o Pair users for help based on:
    - Expertise
    - Current reading progress

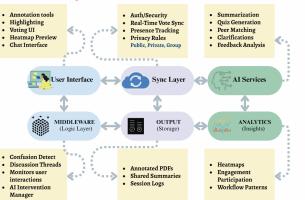
# What is PaperPal?

An all-in-one platform combining real-time annotation, AI summaries, quizzes, and chat to streamline group paper reading.





# **System Architecture**



#### **Features**

- (A) Tunable AI Summaries
  - Easily switch between short summaries and detailed explanations, while AI highlights the main ideas, key contributions, and methods of the paper
- Smart Help from AI or the Right Peer
  - Receive instant AI support through on-the-spot clarifications and smart help suggestions when the system detects you're facing difficulties
  - Collaborate with peers who have expertise in the topic, encouraging peer-led learning alongside AI assistance
- (B) Intelligent Annotation Insights
  - AI helps analyze your annotations in real time to highlight important patterns, main ideas, and group contributions.
- (C) Intelligent Support
  - Get clear, personalized explanations when needed, and use <u>AI-generated quizzes</u> to strengthen understanding and recall of key concepts
  - The system detects when you're struggling and suggests personalized support
  - Connect with knowledgeable peers for collaborative learning, diverse perspectives, and active peer teaching alongside AI guidance
  - Combines real-time AI responses with rich peer interaction for a holistic learning experience
  - AI and peers respond instantly to your questions, keeping study sessions interactive and engaging

#### Conclusion

- PaperPal promotes deeper understanding and inclusive collaboration in academic reading groups.
- Our system enhances research discussions by integrating AI-driven insights and group dynamics in one platform.
- By aligning individual insights and group dynamics, it transforms how research is read, discussed, and learned.