

# Deep Lekhak

Waterloo, Ontario

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## Technical Skills

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**Languages:** Python, Java, C, HTML/CSS, JavaScript, SQL, Bash

**Developer Tools:** VS Code, Eclipse, Git, IntelliJ, Docker

**Technologies/Frameworks:** React, Node.js, PostgreSQL, MongoDB, MySQL, TensorFlow, NumPy

## Experience

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### WEA

May 2023 - September 2023

Group Member

Waterloo, ON

- Collaborated on a cross-institutional team of 5 from UW and Microsoft to conceptualize and design an AI-powered travel itinerary pipeline.
- Explored diverse methodologies for data storage, encryption, and project deployment, contributing to the project's robustness and security measures.
- Analyzed 5 data storage solutions, ultimately proposing Azure SQL Database with dynamic data masking for its scalability and ability to securely manage pseudonymization tokens via Azure Key Vault.

### Hack The North

September 2022 - September 2022

Organizer

Waterloo, ON

- Contributed to the hackathon's success by taking charge of logistics, resulting in a smooth experience for participants.
- Accomplished proficient multitasking, decision-making, and problem-solving by effectively collaborating with cross-functional teams.

### Math Tutor

March 2021 - September 2022

Tutor

Waterloo, ON

- Delivered 2-3 hours of individual tutoring sessions on advanced math topics, resulting in noticeable improvements in students' comprehension and performance.
- Effectively conveyed complex mathematical concepts in an understandable manner.

## Projects

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### RSA Algorithm

🌐 | Java, PostgreSQL

November 2023

- Independently implemented the RSA algorithm, demonstrating proficiency in modular arithmetic and cryptography principles.
- Prioritized robust security by implementing a key size of 1024+ bits, exceeding industry standards for secure encryption and decryption.
- Designed a secure key storage system leveraging SHA-256 hashing and PostgreSQL database integration, ensuring data integrity and access control.

### Facial Recognition AI

🌐 | Python, TensorFlow, Keras, FaceNet

January 2024

- Demonstrated ethical responsibility in AI development by opting for the Microsoft DigiFace dataset of 1 million synthetic images.
- Built a FaceNet facial recognition model from scratch using TensorFlow, through independent research, achieving 90% validation accuracy using 20% of the dataset.
- Investigated and compared various FaceNet architecture variations, ultimately selecting the Inception-based model for its optimal balance of robustness and portability in real-world applications.

### File Transfer Web App

🌐 | JavaScript, React, Node.js, MongoDB, PeerJS, WebRTC

December 2023

- Built and deployed a full-stack web application using the MERN stack for enhanced scalability.
- Enabled secure user access and data management by implementing a user authentication system using MongoDB/Atlas.
- Demonstrated expertise in real-time communication by integrating PeerJS and WebRTC technologies, enabling efficient and secure direct peer-to-peer file transfer functionality.

## Education

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### University of Waterloo

September 2022 - May 2027

Honors Bachelor of Mathematics with CS Minor (GPA 3.8)

Waterloo, ON