

INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER



The University of Westminster, Coat of Arms

**DriversBlock: A Blockchain-Based
Driver License and Traffic Violation Data
Management System for Sri Lanka**

A dissertation by

Mr. Dinith Fernando

W1867047 / 20210183

Supervised by

Mr. Jihan Jeeth

Submitted in partial fulfilment of the requirements for the BEng in Software
Engineering degree at the University of Westminster.

April 2025

Abstract

DriversBlock is a decentralized application designed to modernize driver license issuance and traffic violation data management using blockchain technology. Traditional systems, which rely on paper-based processes or centralized databases, are prone to inefficiencies, data manipulation, and fraud. DriversBlock addresses these issues by leveraging a tamper-proof ledger and employing soulbound tokens to ensure that driver licenses remain permanently bound to their rightful owners.

The system incorporates role-based access control, enabling distinct functionalities for drivers, police officers, and licensing authorities, thereby enhancing transparency and trust. Integration with ThirdWeb for wallet management streamlines user authentication, making the platform accessible to both technical and non-technical users. Although testing was conducted on a local Ganache environment due to challenges in obtaining Arbitrum test tokens, the architecture is fully EVM-compatible, allowing for a seamless transition to live deployment on Arbitrum in the future.

Through a combination of qualitative and quantitative evaluations, DriversBlock has demonstrated its potential to significantly improve public recordkeeping and digital service delivery in the transportation domain. This project sets a new standard for secure, efficient, and scalable driver license and traffic violation data management.

Keywords:

Blockchain Technology, Soulbound tokens, Traffic violation management, Arbitrum, Low gas fee, Data Security, Solidit

Subject Descriptors:

- CCS → Information systems → World Wide Web → Web applications → Electronic commerce → Digital cash
- CCS → Security and privacy → Cryptography → Key management
- CCS → Information systems → World Wide Web → Web applications → Electronic commerce → Secure online transactions