

Intelligent Red-light Violation Identification System (iRIDS)

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Red light violation is one of the major causes of crashes, deaths, and injuries at signalized intersections. Recent crash statistics show that nearly 676 Americans were killed and 113,000 were injured in 2009 due to red light violation related crashes.

- National Highway Traffic Safety Administration statistics

Factors Contributing to Red Light Violation

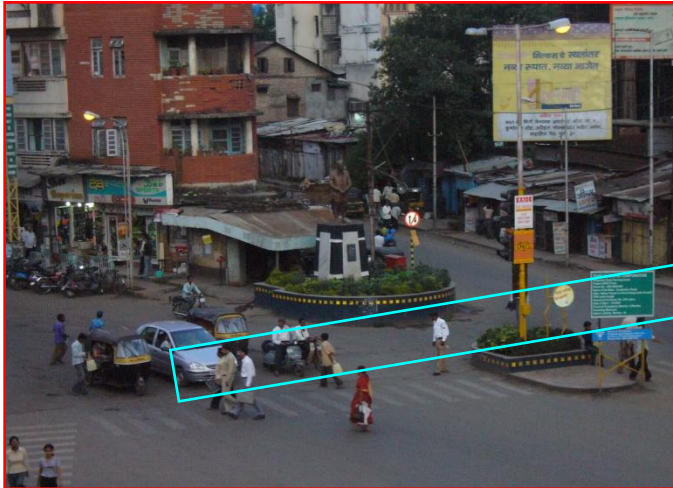
- **Driver behavior**
- **Intersection design and operation**
 - **Grade**
 - **Poor Visibility**
 - **Roadside Obstructions**
 - **Line of Sight**
 - **Traffic Volumes**
 - **Signal Timing**
- **Vehicle characteristics**
- **Weather**

Countermeasures

- Engineering improvements
- Enhanced driver and public education
- Increased enforcement
 - Traditional Enforcement
 - Red Light Camera Systems
 - Documental evidence



Stop line Violation detection with PTZ Cameras

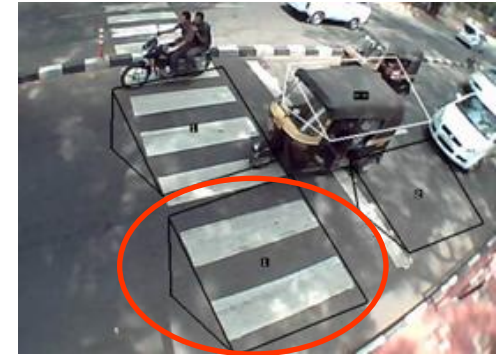


Typical Red light violation

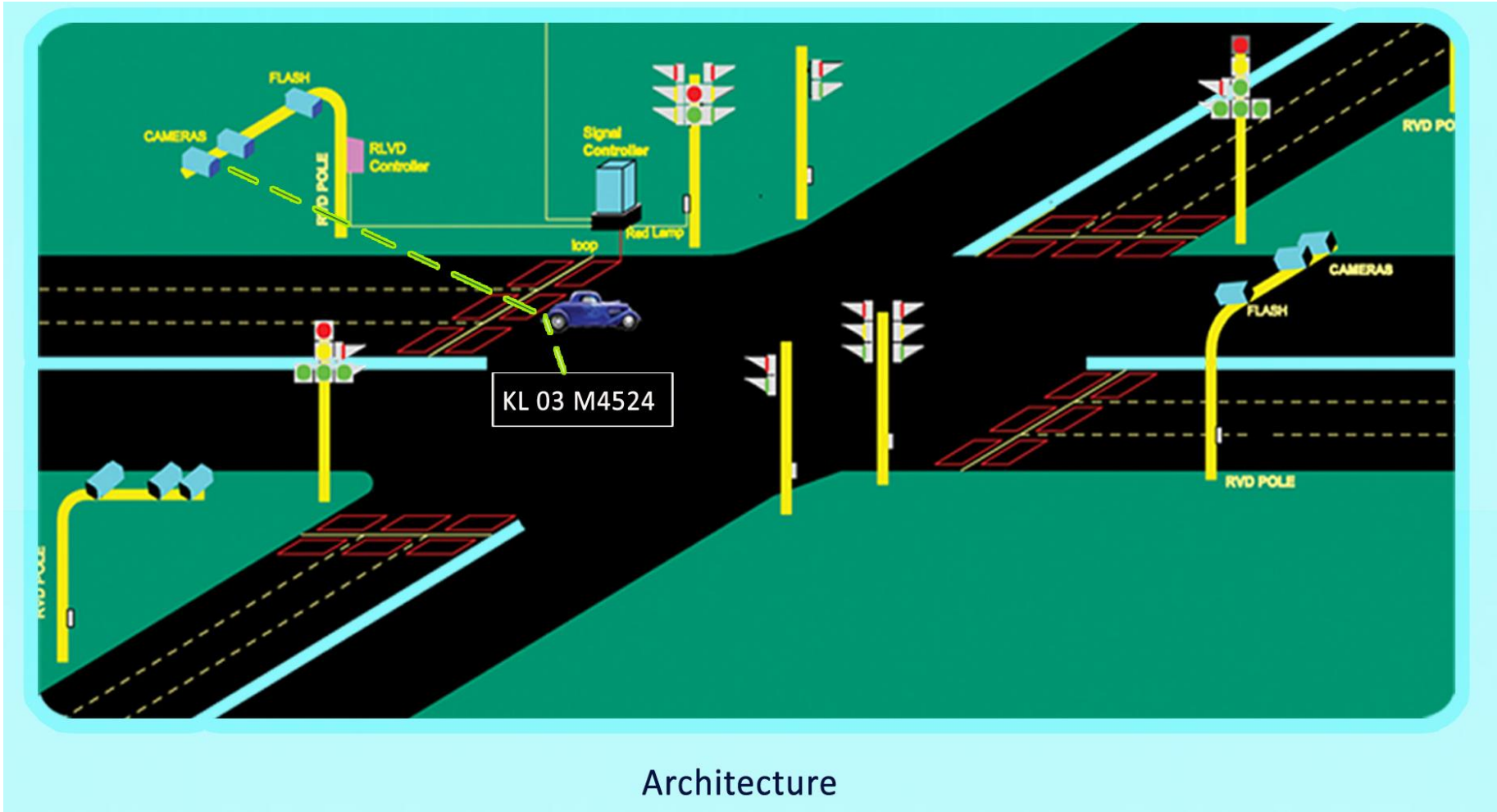


Major Hardware Building Blocks

- Vehicle Detection System
- Video Camera
- ANPR Camera
- Illuminator
- Control Electronics
- Communication network
- Central Server



System Architecture



Operation

- Use two detection loops
 - One at stop-line and the second immediately after stop-line
- When the signal is Red and vehicle touches
 - First loop, video recording starts for the entire red cycle
 - Second loop, Number plate Image by ANPR camera.
- If the vehicle touches only the first loop during Red, the recording is discarded when the signal turns green
- Video and snapshot presented for processing
 - Three Second video for evidence for each violation

Typical Evidence

Verification
Search
Reports
Advanced Search
✕

RED LIGHT VIOLATION STATEMENT

Violation ID : 011050320121013097051013125021

Vehicle Number : KL01BE1336

Owner name & address : RAJEEV, TRIVANDRUM

Vehicle Type : LMV RE AUTORIKSHAW

Date & time of violation : 05-03-2012 10:13:12



Place of violation : CDAC

Penalty amount : 500/-

Due date : Tue Mar 20 17:00:00

Fine after due date : --

Payment Status : Not Paid. Need to pay Rs 500/-

[Make Payment](#)

Video Evidence



Automatic License Plate Recognition (ALPR)

iRIDS supports any third party ALPR

iRIDS ALPR

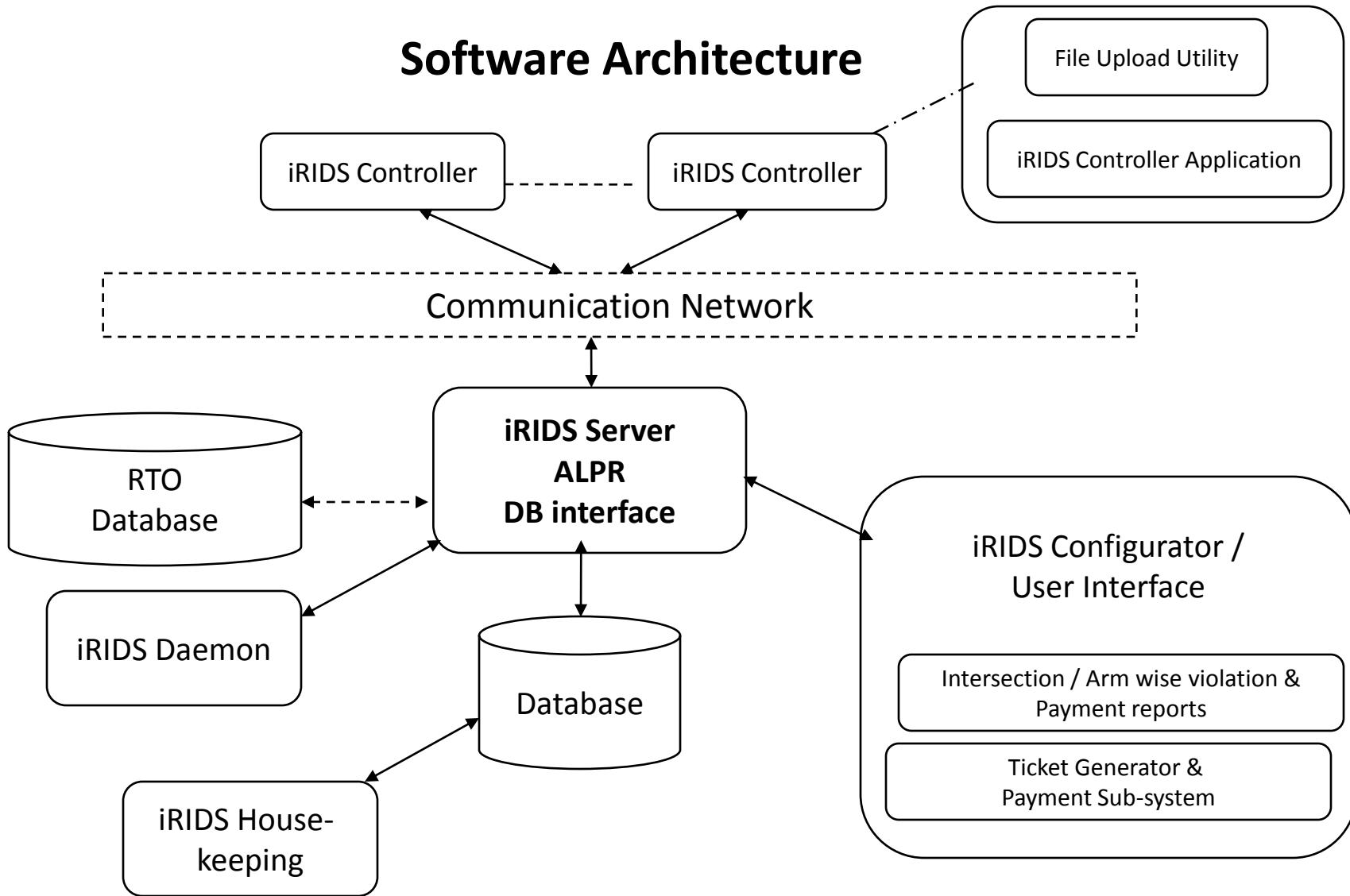
Collaboration with MS University Tirunelveli

Challenges

- Sub-standard number plates
- High mix of Traffic
- Low level of lane discipline
- Multiple violations
- Poor lighting at the intersection
- Cost



Software Architecture



RLVD Reports

Violation Reports based on

- ❖ Intersection
- ❖ Arm

Repeated violations based on

- ❖ Registration number
- ❖ Number of violations

RED LIGHT VIOLATION DETECTION SYSTEM-REPORTS

RED LIGHT VIOLATION INFORMATION
FROM : 10-05-2012 TO: 13-05-2012
AT CDAC

VIOLATION ID	DATE AND TIME	ARM NAME	LICENSE NUMBER	VEHICLE MODEL	OWNER NAME	AMOUNT (Rs.)	STATUS
0111005201207504998007310018093	10-05-2012 07:51:09 AM	Arm1	KL01AQ951	LMV - MOTOR CAR,Below 1500 CC	SUDA KOSHY	500.00	Upaid
011100520120840594320410898902	10-05-2012 08:41:50 AM	Arm1	KL01BD700	LMV - 3 WHEELED VEHICLE FOR TRANSPORT- PASSENGER (A,R)	UDAYAKUMAR	500.00	Upaid
011100520120840594320410898903	10-05-2012 08:41:50 AM	Arm1	KL01A5874	LMV - 3 WHEELED VEHICLE FOR TRANSPORT- PASSENGER (A,R)	TRABER	500.00	Upaid
011130520120815055010815182851	13-05-2012 08:15:16 AM	Arm1	KL01AE356	LMV - 3 WHEELED VEHICLE FOR TRANSPORT- PASSENGER (A,R)	SOMEISH	500.00	Upaid
011130520120815055010815182810	13-05-2012 08:15:13 AM	Arm1	KL01AE3751	MOTOR CYCLE - ABOVE 95CC	SRATHU SEATH	500.00	Upaid
011130520121041284011040446653	13-05-2012 04:04:34 PM	Arm1	KL01BB6398	LMV - MOTOR CAR,Below 1500 CC	ALISA L	500.00	Upaid
011130520121041284011040442441	13-05-2012 04:04:32 PM	Arm1	KL01AS1277	RPMV - STAGE CARRIAGE	SRI O A ARJUNKUMAR	500.00	Upaid

Thank you