ADAPTIVE TRAFFIC CONTROL

OGHENEKARO D UROJAIYE
ABOUT KARO
ADAPTIVE TRAFFIC CONTROL

- SIMULATING TRAFFIC SCENARIOS
  - 3D & 2D VIRTUAL ENVIRONMENTS

- ESTABLISHING VIRTUAL VEHICLE & ROAD SIDE INFRASTRUCTURE COMMUNICATION
  - INTERACTION BETWEEN OBU & RSU

- SIGNIFICANCE OF CONNECTING VEHICLES
  - GREEN LIGHT OPTIMIZED SPEED ADVISORY (GLOSA)
  - COLLISION AVOIDANCE
THE SET UP

- VISSIM: 2D MATHEMATICAL MODEL OF THE URBAN NETWORK
- UNITY: 3D VERSION OF THE VISSIM SIMULATION
- THE DRIVING SIMULATOR: 3 SCREEN MONITOR AND FIRST-PERSON STYLED DISPLAY
INSIDE VISSIM

- CONTAINS MODEL OF SIMULATED URBAN NETWORK
- INCLUDES CONTROLLED VEHICLE TRAFFIC LIGHTS, CARS, INTERSECTIONS etc.
INSIDE UNITY

- MIMICS THE VISSIM SIMULATION IN A 3D FORM
- DRIVER SEES IN FIRST-PERSON
THE DRIVING SIMULATOR

- 2-PLATFORM INTERFACE
  - VISSIM & UNITY SIMULATOR INTEGRATION
- DRIVER IS PART OF VIRTUAL ENVIRONMENT
  - INTERACTS WITH VIRTUAL VEHICLES
  - VEHICLES REACT TO DRIVER
  - AVOID COLLISION AND CONFLICT
CHALLENGES

- Integrating Unity and VISSIM
  - Combining Unity C# scripts and VISSIM C# code
- Establishing seamless communication
  - Unable to spawn the other virtual vehicles in 3D environment
- Program crashing
SOLUTIONS

- DISSECT VISSIM SIMULATION CODE
- UPDATE SOFTWARE VERSIONS
- BREAK DOWN UNITY SCRIPTS AND OBJECTS
RESULTS

- FULLY FUNCTIONAL SIMULATOR
  - SPEED TRACKING
  - EASY VEHICULAR CONTROL
  - VISSIM LOADING WITH UNITY
  - VISSIM RELAYING VEHICLE POSITION TO UNITY GAME
FUTURE WORK

- SPAWNING VISSIM VEHICLES IN UNITY
- VIRTUAL REALITY