


# Traffic Management using AI


Ahmed Alaa
Mahmoud Gamal
Mohamed Elshafey
Rami Shoula
Sara Elbesomy





# ABOUT US

WE are a team of 5 with technical background in NanoTechnology, electronics, communication and Information technology.
Our goal is to apply our knowledge into a social impact solutions to help our community.

# Idea

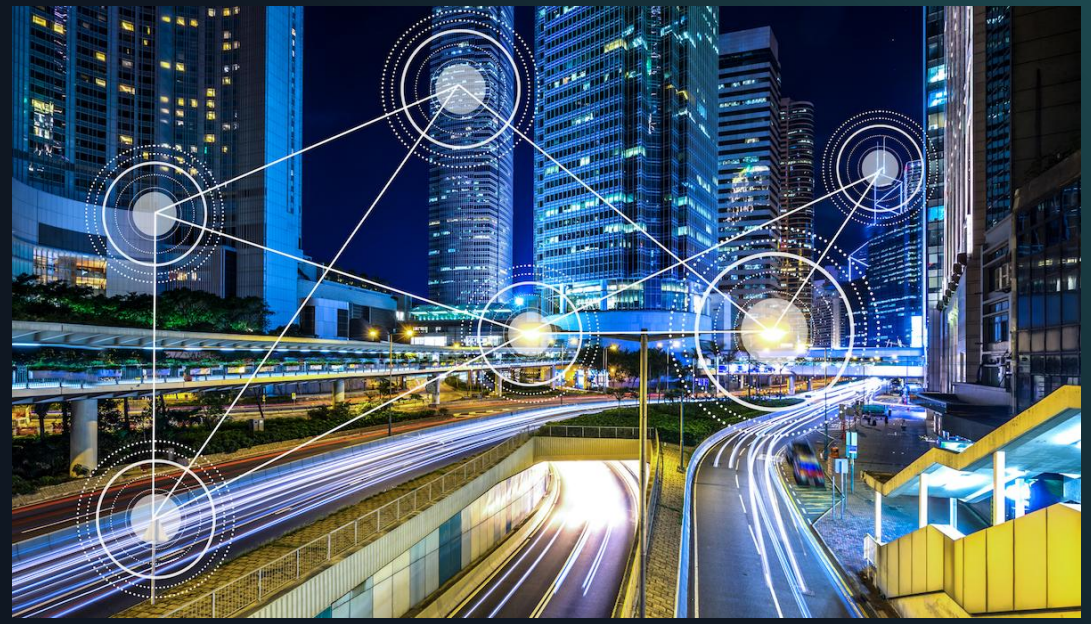
**Our idea is to implement a more effective traffic system in highly dense regions in Egypt as our traffic system has many issues that yields huge problems affect all society such:**

- Accidents because of the higher chances of collisions.
- Delays and wasting time for passengers so, it has a very negative impact on the economy.
- Negative impact on the vehicles health.
- Wasted fuel and air pollution increasing due to emissions of $CO_2$

# SOLUTION

- These mentioned problems caused by various reasons , one of them is the inefficient use of the existing network.
- We propose to use AI algorithms to solve this problem:

  We would like to use AI to make our traffic light to learn what is the best option to take. By using RL , for example, we give the traffic light agent the opportunity to learn online while make its predictions which make him smarter every single time step.
- In addition , we need to make a compatible IOT structure for the city to boost the performance of the traffic management agents.



# 4 Focuses Approach

**Discuss the impact of the start-up on 4 different levels that define the goals of AT.**

## Social

Our solution have a positive social impact as it relieves the traffic jam on a scale of cities. Therefore:

- It save the time of passengers.
- It prevent many health problems in the community.

## Technical

Our solution aim to use very high technology as it will use AI algorithms in addition to IOT solutions to make the traffic system reach the best performance.

- It is feasible.
- It does not require high computational power to operate.
- It could be done be local technology providers.

## Economic

- Improve the good's transportation quality and make it faster.
- Reduce the fuel usage so, it helps individuals save its costs.

## Environmental

- Reduce the harmful emissions rates.
- Reduce the usage of fuel.
- Reduce wastes by reducing crashes

# SWOT

## Strengths

- Increase safety and comfort.
- Smoothens the traffic flow which decrease the traffic waiting time.
- Increase the efficiency of the roads infrastructure.
- Decrease fuel consumption.
- Decrease pollution.
- Increase the dependency on autonomous vehicles which is a international demand.

## Weaknesses

- Needs high maintenance.
- Needs high quality components.
- High initial costs.
- May cause limits over speed , so it may decrease the network efficiency.

## Opportunities

- V2V/V2I communication is a trending field that may assist the traffic management to be more reliable.
- Improving the infrastructure by using one smart algorithm that increase the efficiency of your existing infrastructure.
- Development and smart cities is a global direction.
- funder and donors for such business.

## Threats

- Unpredictable actions from the autonomous vehicles or traffic lights that may cause disasters.
- Increase the overall time travel for passengers by putting restrictions over speed.
- Car companies may threaten our product because we will decrease their production.

# Refined SWOT Matrix

| | Strengths: | Weaknesses: |
|---|---|---|
| Marketing Factors | strategic location as an economic hub (great economic potential) | No recognition of Non-Motorised Transport (NMT) policy |
| Financial Factors | High demand for public transport | Large area, large population and rapid growth are difficult to manage |
| Operation Factors | Capability to carry high volumes | Weak enforcement of traffic laws |
| Organizational Factors | Suitable for long distance transport | Lack of organizational capacity to cover entire region |
| | Opportunities: | Threats: |
| Micro Environment Forces | • Large Population<br>• Robust economy<br>• Attractive for investment | • Insufficient (transport) infrastructure<br>• Weak technology and innovation<br>• Risk of climate change |

# Business Plan

| | Strengths: | Weaknesses: |
|---|---|---|
| Opportunities: | SO Strategies<br>• Utilizing rising economy and large populus to enforce traffic regulations<br>• Implement long distance routes such as highways with less exits<br>• Apply services along routes as a secondary income source | WO Strategies<br>• Enforce strict laws and regulations for transportation routes<br>• Employ official NMT routes and raise awareness<br>• Implement subway/train routes to regulate dense population |
| Threats: | ST Strategies<br>• Invest in transportation technologies<br>• Promote events to increase awareness of public safety and transport regulations | WT Strategies<br>• Using subway/train system to reduce weather climate effects<br>• Employ rapid traffic regulations for crash incidents<br>• Regularly enhance and update transport infrastructure with latest technologies |

# Action Roadmap

1.

**Laws & regulations**

Enforce strict laws and regulations for transportation routes for both motorized and non-motorized transport.

2.

**Alternate transport**

Employ subway and train systems to reduce traffic and increase long-distance transport effectiveness while reducing weather effects.

3.

**Awareness & education**

Advertisements and events to promote awareness of public safety and transport regulations with services.

4.

**Update infrastructure**

Constantly implement latest transport technologies and methods while maintaining current.

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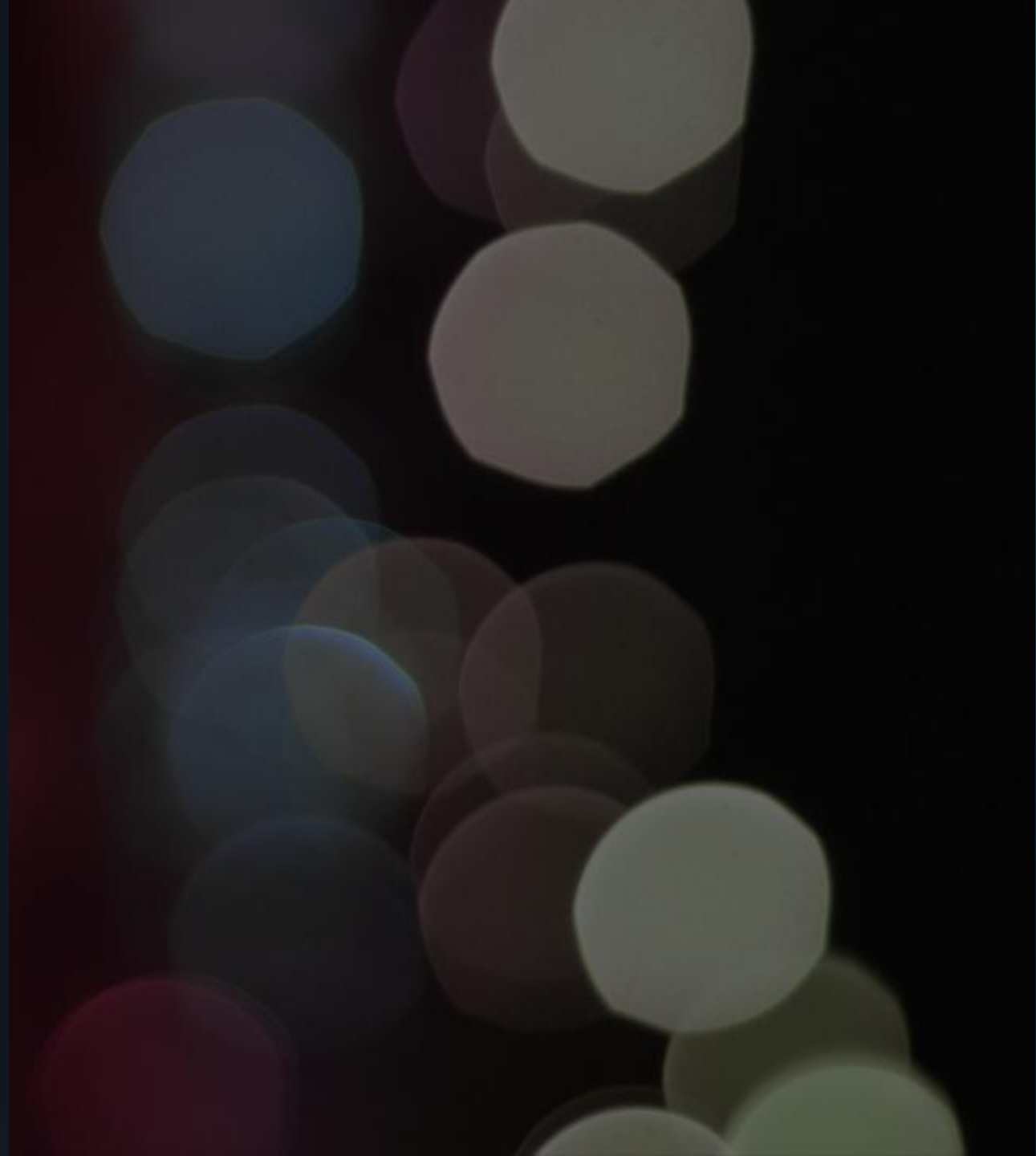

# THANK YOU!