



# AISSMS



**POLYTECHNIC**



AY 2023-24 Issue II

Staff Editors: Mr. G.M.

Nagane, and Mr. M. S.  
Bhave

Student Editor:

Alphanso Brandon, (TY  
AE Student )Published

by:Automobile  
Engineering

**Our  
Polytechnic  
is a Centre  
of Academic  
Excellence!**

## **Vision, Mission and Objectives of AISSMS Polytechnic.**

### **VISION:**

Achieve excellence in quality technical education by imparting knowledge, skills and abilities to build a better technocrat.

### **MISSION:**

- Empower the students by inculcating various technical and soft skills.
- Upgrade teaching-learning process and industry-institute interaction continuously.

### **OBJECTIVES:**

- To inculcate learning habits in students by project based learning.
- To strengthen all the departments by encouraging faculty development.
- To motivate students for personality development, career guidance and encourage the spirit of team work.
- To strengthen industry – institute interaction and develop entrepreneurship skills.



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Automobile  
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Department  
AISSMS's Polytechnic,

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## **Vision, Mission and Objectives of Automobile Engineering Department**

VISION:

“To achieve excellence in technological and social aspects of automobile engineering.”

MISSION:

- Comprehensive development of student by using state of art infrastructural facilities.
- Development of engineering mind-set within the students.
- Continuous enhancement of skill sets of student and faculty through industry-institute interaction.
- Imparting social and ethical values among the students.

PEO:

- Provide socially responsible, environment friendly solutions to Automobile engineering related broad-based problems adapting professional ethics.
- Adapt state-of-the-art Automobile engineering broad-based technologies to work multi-disciplinary work environments.
- Solve broad-based problems individually and as a team member communicating effectively in the world of work.



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### COVER STORY

- **Toyota Car using water as fuel**
- **Inside Pages:**
- **Role of AI in Auto Industry**
- **Activities of Department such as Industrial Visit, Expert lectures, etc.**



## Toyota Car using Water as fuel !

The automotive industry is on the brink of a major shift towards environmentally-friendly transportation, and Toyota is leading the charge with its innovative water engine. This new technology, which has the potential to disrupt the Electric Vehicle (EV) industry, is a testament to Toyota's commitment to sustainability and reducing emissions

The water engine, also known as the hydrogen fuel cell, works by using hydrogen and oxygen to generate electricity, with water as the only emission. This groundbreaking technology offers several advantages over traditional EVs, including a longer range, faster refueling time, and a reduced need for new infrastructure.

Toyota, a brand synonymous with sustainability, is reportedly on the verge of unveiling an engine that could revolutionize the entire automobile industry. Forget about electric batteries and hydrogen fuel cells. Toyota is introducing a water-powered engine that promises unparalleled eco-friendliness. This might sound like something out of a science fiction novel, but Toyota is no stranger to pushing the boundaries of technology.

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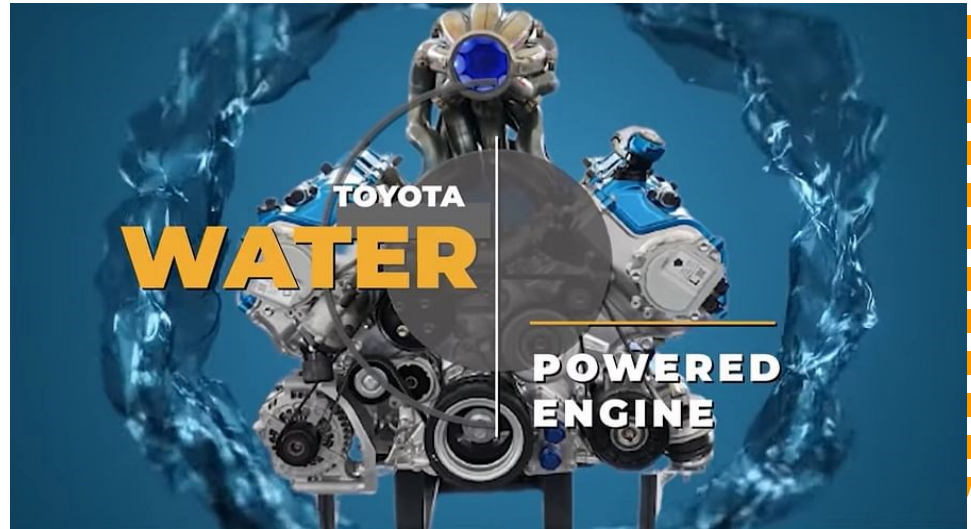
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# Toyota's Water Powered Engine



## Inside Story Headline

The company already has a strong foothold in eco-friendly automotive technology with its hydrogen-powered vehicles like the Toyota Mirai and its new 1.6-liter hydrogen three-cylinder engines. But this new engine is shaping up to be something entirely different. The concept of a water-powered engine is not new, but it has often been relegated to the realms of aspirational projects, academic exercises, or low-budget garage experiments.

Until now, no major automaker has succeeded in producing a water-powered engine that's practical, reliable, and ready for mass consumption. Toyota, backed by significant R&D budgets and world-class engineering talent, is well-positioned to turn this

seemingly fantastical idea into an everyday reality.

How does Toyota's water-powered engine work? It transcends existing fuel technologies by performing electrolysis in real time to create a self-sustaining cycle. Unlike traditional hydrogen vehicles that require cumbersome high-pressure storage tanks, this engine employs a water tank equipped with electrodes. When these electrodes receive high voltages, they immediately separate water into its basic elements like hydrogen and oxygen. This on-the-fly electrolysis eliminates the need for external hydrogen storage, resulting in a more compact and lightweight design.

After the hydrogen is isolated, it is directed into the combustion chamber,

where it ignites similarly to compressed natural gas. The whole setup is a self-contained marvel of engineering efficiency, obviating the need for intricate refueling stations or external storage systems. The eco-conscious implications of this technology could be transformative. It emits near zero emissions, making it a formidable rival to even the most advanced electric vehicles. Moreover, it sidesteps the environmental repercussions associated with extracting rare earth metals for batteries and the oil consumption linked to traditional engines. This is sustainable mobility reimaged.

Beyond its ecological virtues, the engine is remarkably user-friendly. A vehicle with this engine can be refueled with distilled water,



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# Toyota's Water Powered Engine(Contd.)

a resource that is both abundant and accessible.

This is in stark contrast to the logistical complexities of charging EVs or refueling hydrogen vehicles, areas where infrastructure is still evolving. A vehicle with this engine can be refueled with distilled water, a resource that is both abundant and accessible.

Safety is another strong suit. The absence of continuously stored, highly combustible fuels significantly reduces the risks of fire or explosions. With their straightforward mechanical designs, water-powered engines offer an economical and scalable alternative to traditional gasoline engines. Their simplicity makes them more cost-effective to produce than either electric vehicles or fuel-cell electric vehicles.

This could make them an ideal solution for developing countries with limited oil resources.

For example, Iranian scientist Aladin Qasemi successfully converted his Peugeot 405 to run on water, showcasing the feasibility and potential of such technology even without extensive resources. Water-powered engines are also impressively fuel efficient. Qasemi's converted 405 achieved between 30 and 40 miles per gallon of water. Significantly better than the gasoline engine of the same model. This suggests that with proper engineering, water-powered cars could deliver outstanding fuel economy, making them even more cost-effective to operate.

Although still in their infancy, water-powered engines appear to have a promising future. However, their road to mainstream adoption is not without challenges. Safety concerns, for instance, have been a hurdle for similar hydrogen-powered vehicles.

Yet, the armored designs of hydrogen combustion engines indicate that safe water-powered cars are attainable.

The inherently stable form of hydrogen storage in water further mitigates risks. Reliability is another strong point. The engine's simplicity makes them less prone to breakdowns compared to EVs. Should an issue with the electrolysis process occur, one could potentially carry a backup tank of hydrogen, although this is not a feature of Toyota's current design. Moreover, maintenance costs are expected to be low due to the engine's uncomplicated design, consisting of fewer mechanical components and electronics that could fail.

(An article by M.S. Bhawe,  
Sr. Lecturer)



# Role of AI in Automobile Industry

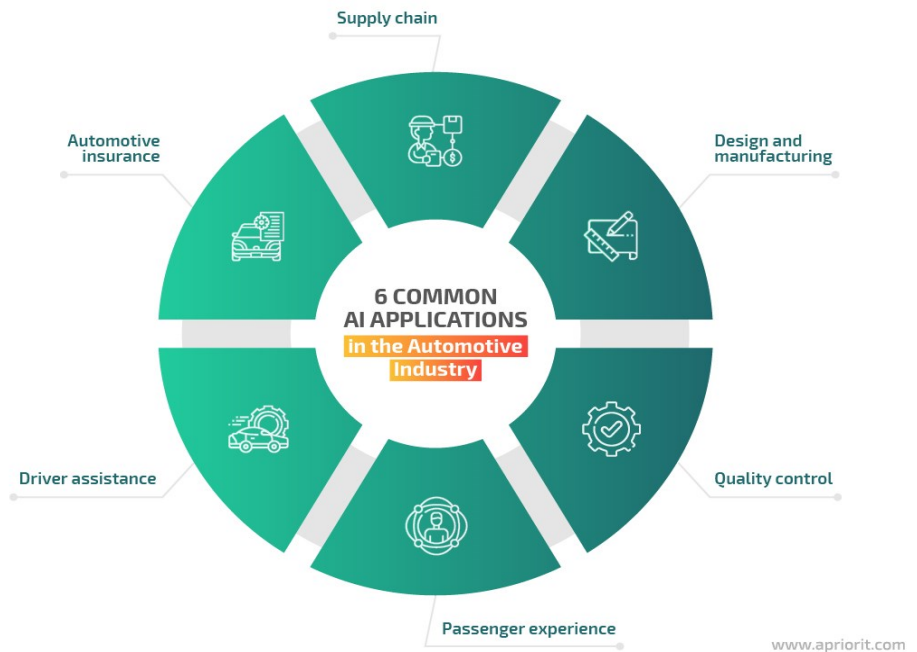
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Car manufacturers are constantly looking for ways to speed up design, production, and manufacturing processes while improving vehicle quality. Customers want to see vehicles that offer pleasant, comfortable, and productive experiences rather than simply getting them from one place to another place.

Artificial intelligence (AI) may be the answer. AI technologies have enormous potential when applied both in production and manufacturing processes as well as within vehicles to power in-car functionality.

Application of AI will be as per above 6 services related with Automobile Industry

### 1. Design and manufacturing

AI-powered solutions and ML algorithms help vehicle manufacturers improve production processes, speed up data classification during risk assessments and vehicle damage evaluations, and do many other things. AI systems and robotics solutions relying on such technologies as computer vision, natural language processing, and conversational interfaces are widely applied in vehicle manufacturing.

For example, NVidia's Quadro RTX graphics card [PDF] uses AI to significantly accelerate design workflows. Rethink Robotics makes collaborative robots for performing tedious tasks like handling heavy materials and inspecting produced parts.

### 2. Supply chain

It's vital for vehicle manufacturers to be able to monitor every stage of a component's journey and know exactly when to expect its arrival at the destination plant. That's why modern supply chains often rely on cutting-edge IoT, block chain, and AI technologies.

In particular, vehicle manufacturers can turn to solutions relying on different machine learning algorithms and AI-powered predictive analytics. With their help, manufacturers can estimate demand for components and predict possible changes in demand in a timely manner.

For example, Blue Yonder leverages AI technologies to increase inventory movement visibility and enable manufacturers to predict possible delivery disruptions.

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# Role of AI in Automobile Industry

### 3. Quality control

AI can enable timely detection of various technical issues. Based on data gathered by in-vehicle sensors, an AI system can inform a user that a certain component or system requires maintenance or needs to be replaced as early as the need arises. Manufacturers also use AI-powered quality control systems to detect possible flaws in parts before they get installed.

In-car quality control systems mostly rely on data processing and analysis methods, while solutions used in manufacturing leverage image recognition and sound processing AI solutions.

### 4. Passenger experience

To make sure all passengers are safe and satisfied, manufacturers enhance their vehicles with all kinds of AI-powered applications meant to upgrade the passenger experience.

Some systems use face recognition and emotion recognition methods to evaluate the state of the driver and passengers.

Others deploy natural language processing and natural language generation methods to enable passengers to watch movies, listen to music, and even order goods and services while on the road.

For example, Dentsu and Hyundai invested \$10 million in the Audio burst project to create an AI-powered infotainment system. Using automatic speech recognition and natural language understanding, this system will enable passengers to search music/audio libraries, enjoy personalized music playlists and news briefs, and so on.

### 5. Driver assistance

Of course, let's not forget about improvements to the driving experience offered by AI technologies. There are AI systems meant to assist drivers and ensure safety by warning them about traffic and weather changes, offering the most efficient routes, or paying for goods and services on the go.

CarVi is an advanced driver assistance system (ADAS) that uses AI capabilities to analyze traffic data. It also notifies drivers in real time about possible dangers like driving conditions, lane departure, and forward collisions. Such solutions rely heavily on real-time image and video recognition, object detection, and action detection, but may also use speech recognition and natural language processing technologies.

### 6. Automotive insurance

AI-powered solutions have great potential in handling insurance claims. On the driver's side, in-vehicle AI capabilities can be used for gathering incident data and filling out claims. Such a system would need to combine smart data analytics, speech recognition, natural language processing, and text processing and generation



# Role of AI in Automobile Industry

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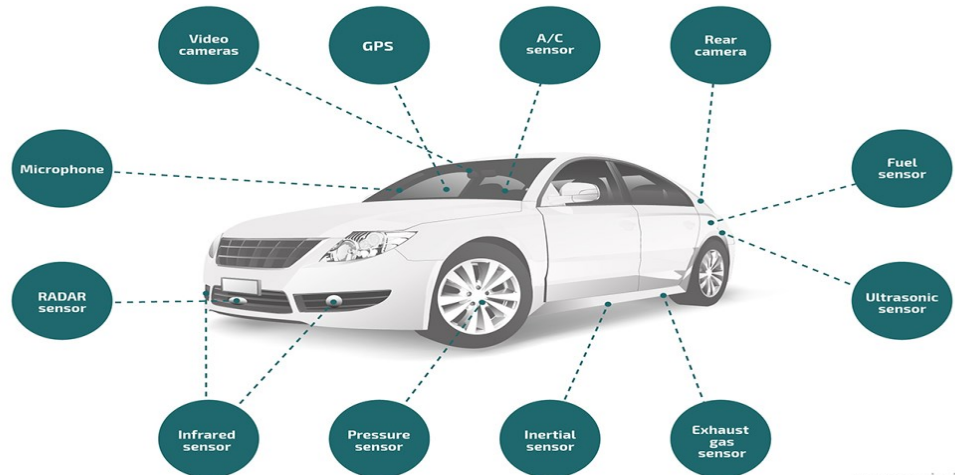
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On the insurance provider's side, AI systems leveraging image processing and object detection technologies can be of great help for improving the accuracy of vehicle damage analysis.

An example of using AI in car insurance is the PingAn Auto Owner application which uses AI capabilities to assess photos uploaded by users making insurance claims. Nauto's intelligent fleet management system has an AI-powered collision detection feature that enables quicker and more accurate processing of insurance claims.

The variety of possible applications of machine learning in the automotive industry are impressive. Manufacturers can deploy AI technologies for designing and building new prototypes, improving the efficiency of their supply chains, and enabling predictive maintenance for both factory equipment and vehicles on the road.

AI is also the power behind driver and passenger assistance services delivering experiences such as driverless transportation, in-car shopping and entertainment, instant insurance claim filing, and so on.

But despite its promising potential, the use of AI in the automotive industry is associated with several challenges. Some of the biggest are associated with algorithm biases, data quality, and understanding how a model came to a certain conclusion.

(Compilation of information by Raj Kenoni (TY AE student))

# Activities of Department

## Expert Talks List

YEAR	ACTIVITY	Month and year
2023-24	Expert talk on Robotics and automation	08/01/2024
	Expert talk on Automotive Ergonomics	10/01/2024
	Expert talk on Battery designing in EVs	19/01/2024
	Expert talk on Design for manufacturing (Body in white)	20/02/2024

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# Activities of Department

## Industrial Visit List

YEAR	ACTIVITY	Month and year
2023-24	Visit to AISSMS Private industrial Training Institute Boribhadak, Pune	27/10/2023
	Visit to Autorounders, Ramtekdi, Pune	02/11/2023
	Visit to PUC Centre ,Shivaji Nagar ,Pune	02/02/2024
	Visit to Katraj Dairy ,Katraj, Pune	08/02/2024
	Visit to Vishwa CNC Technologies, Pvt. Ltd.	09/02/2024

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# Activities of Department

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## Extra Curricular Activity : Shiv Jayanti (19/02/2024)

Shiv Jayanti was celebrated in the Institute Campus with great enthusiasm. The colorful celebration started with the first ever publication of college magazine 'Aarohan'. It was followed by inspirational speeches, patriotic songs, dances and cultural activities. The program concluded with procession of statue of Shivaji Maharaj.

