

Smart City Newsletter



By IEEE CTSoc Application-Specific CE for Smart Cities Technical Committee (SMC TC)

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Editors note:-

We would like to express our sincere gratitude to Dr. Himanshu Thapliyal, Mr. B.C. Ang, and Dr. Fabrizio Lamberti for initiating this newsletter and providing their invaluable guidance. We are honored to have the opportunity to continue their vision and are excited to share the latest news and insights from the field of smart cities.

We would also like to introduce ourselves as the current editors of the newsletter, Himanshu Daga and Dr. Chun Sing Lai. We are thrilled to be a part of this initiative and look forward to working with our esteemed colleagues and readers to create engaging and informative content.

Lastly, we invite all of our readers to contribute to the newsletter by sharing resources, articles, and projects. We welcome industry professionals to showcase their products and projects and invite collaborations between academia and industry. Let's work together to promote the advancement of smart cities.

Thank you for your continued support.

Best regards,
Himanshu Daga and Dr. Chun Sing Lai

Evolution of concept of smart cities:-

A smart city uses a framework of information and communication technologies to create, deploy and promote development practices to address urban challenges and create a joined-up technologically enabled and sustainable infrastructure. The concept of smart cities has been around for decades but it has become more prominent in recent times due to many advances in sensors & communication technology, artificial intelligence, IoT, renewable energy & other innovations in emerging technologies. As SMC-TC, we aim to spread awareness about the advances going around the globe & throw light on limitations so that the academic community can collaborate towards solving them. In the first issue, we have covered how the concept of smart cities evolved over the last decade.

2013: Barcelona launches its "smart city" initiative, which includes the use of emerging technologies to optimize waste management and reduce energy consumption.

- Barcelona started its "smart city" effort in 2013 to use technology to raise the standard of living for its residents while simultaneously lessening the city's negative environmental effects. The use of AI to improve waste management and lower energy use was one of the initiative's core elements.
- Barcelona set up a system of intelligent trash cans with sensors that could tell when they were full and need emptying. This allowed waste management vehicles to be deployed just when needed, decreasing fuel usage and vehicle emissions. By adjusting collection routes, the city was also able to minimize travel time and the environmental effect of garbage collection.
- The city also made use of AI-powered lighting systems that could autonomously change lighting settings based on foot traffic and ambient light, consuming less energy while maintaining public safety. To reduce water waste and promote sustainable landscaping, the plan also featured the deployment of smart irrigation systems that could modify watering schedules based on the weather and soil moisture levels.

2014: The Indian government launches its "100 Smart Cities" program focusing on emerging technologies to improve urban life.

- Aiming to create 100 contemporary, environmentally friendly, and technologically advanced communities across the nation, the Indian government introduced its "100 Smart Cities" program in 2014. Using AI and other cutting-edge technology to enhance urban living was one of the program's primary goals.

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- The program comprised several projects aimed at utilizing AI to enhance urban services and inhabitants' quality of life. For instance, the government intended to employ AI-powered traffic control technologies to enhance traffic flow and lessen congestion in key cities. This would include installing sensors and cameras that could keep an eye on traffic in real time and offer information that might be used to improve traffic signals and redirect traffic as needed.
 - Initiatives to use AI to enhance public safety, healthcare, and education were also included in the program. For instance, the government intended to deploy AI-powered healthcare systems to diagnose and treat illnesses more quickly and correctly, as well as AI-powered surveillance systems to keep an eye on public areas and spot criminal behavior. It was also intended for AI-powered educational systems to offer pupils individualized learning opportunities.

2015: Singapore launches its "Smart Nation" initiative, with plans to use AI to improve traffic management, healthcare, and public safety.

- A nationwide program to use technology and innovation to build a more livable, sustainable, and effective city was launched by the Singaporean government in 2015 under the name "Smart Nation". Using AI to enhance healthcare, public safety, and traffic management was one of the initiative's main tenets.
- Singapore has a system of intelligent traffic signals that employ AI to optimize traffic flow in real-time to enhance traffic management. To identify traffic patterns and modify signal timings accordingly, the system employs sensors and cameras. This decreases congestion and improves travel times.
- Singapore has a telehealth system that uses AI to connect patients with doctors remotely, decreasing the need for in-person consultations and enhancing access to healthcare services. AI is used by the system to assess patient data and offer individualized diagnosis and therapy suggestions.
- Singapore established an AI-powered surveillance system that employs face recognition technology to identify and discourage criminal conduct to increase public safety. The technology enables real-time monitoring of public locations and is connected with the city's police department.

2016: The city of Toronto launches its "Sidewalk Toronto" project, which includes the use of AI and other technologies to create a more sustainable and efficient urban environment.

- In 2016, the city of Toronto in Canada launched the "Sidewalk Toronto" project, a joint effort with Alphabet Inc.'s Sidewalk Labs to create a more sustainable and efficient

urban environment. One of the key components of the project was the use of AI and other technologies to achieve these goals.

- The project aimed to create a new model for urban development that would combine sustainable design, cutting-edge technology, and innovative public policy. It included the development of a "smart city" district on Toronto's waterfront, which would be equipped with sensors, cameras, and other IoT devices to collect data on a range of urban systems, including energy use, traffic flow, and air quality.
- To find trends and real-time improve urban systems, the data collected by these sensors would be evaluated using AI and other sophisticated analytics technologies. For instance, the system might redirect traffic to avoid congestion, change traffic lights based on traffic volume, and change energy consumption to cut down on waste and pollution.
- Together with several initiatives aimed at encouraging community participation in the planning and construction of the smart city zone, the project also placed a strong emphasis on citizen interaction. Workshops, public discussions, and other types of interaction were all part of these projects.

2017: The city of Amsterdam launches its "Amsterdam Smart City" initiative, which includes the use of AI to optimize public transportation and reduce energy consumption.

- The "Amsterdam Smart City" project, a program aiming at building a more sustainable, livable, and inventive city, was introduced by the city of Amsterdam in 2017. The use of AI to optimize public transportation and lower energy use was one of the initiative's core tenets.
- The program comprised several projects aimed at enhancing urban services and minimizing the environmental impact of the city by utilizing AI and other cutting-edge technology. For instance, the city set up a traffic management system driven by AI that analyzes real-time data to improve traffic flow, lowering congestion and enhancing travel times.
- Initiatives to use AI to lower energy usage in buildings and other urban infrastructure were also included in the program. For instance, the city set up a smart grid driven by AI that analyzes current data to improve energy distribution while lowering waste and boosting effectiveness. Initiatives to promote the use of renewable energy sources, such as solar and wind power, were also included in the program.
- The encouragement of citizen interaction and co-creation was another important aspect of the Amsterdam Smart City concept. To create a more inclusive and participatory urban environment, the program comprised a variety of measures meant

to encourage cooperation between residents, companies, and the municipal administration.

2018: The city of San Diego launches its "Smart Streetlights" program, which includes the use of AI and other technologies to optimize lighting levels and reduce energy consumption.

- The "Smart Streetlights" program, a city-wide project aiming at utilizing AI and other technologies to improve lighting settings and minimize energy usage, was introduced in 2018 by the city of San Diego, California. The local administration and General Electric (GE) Current, a division of General Electric, collaborated on the scheme.
- Almost 3,200 smart streetlights were installed as part of the scheme throughout the city. These streetlights have sensors, cameras, and other Internet of Things (IoT) devices installed in them that gather information on a variety of urban systems, such as traffic flow, parking availability, and air quality.
- In order to improve lighting conditions and save energy usage, the data acquired by these sensors is evaluated using AI and other cutting-edge analytics techniques. For instance, the system may modify lighting settings based on traffic volume, saving energy during periods of low traffic and enhancing visibility during periods of high traffic. Also, the technology can tell when a streetlight needs repair or maintenance, making it easier for the city to manage its infrastructure.
- Together with an emphasis on public safety, the Smart Streetlights initiative also installs cameras and other sensors to increase security and lower crime. The system can be easily integrated with other urban systems and technologies since it is made to be very versatile and adaptive.

2019: The city of Helsinki launches its "AI City Challenge", a competition that invites companies and organizations to propose innovative AI-powered solutions to urban challenges.

- A competition inviting businesses and organizations to provide creative AI-powered solutions to urban difficulties was established by the Finnish city of Helsinki in 2019. The competition was a component of the city's larger "AI-driven City Development" initiative, which intends to use AI and other cutting-edge technologies to build a more sustainable, effective, and livable city.
- The AI City Challenge asked businesses and groups from across the world to submit ideas for AI-powered solutions to a variety of urban concerns, such as traffic management, energy efficiency, trash reduction, and citizen engagement. There was an emphasis on ideas that were scalable, sustainable, and had a good influence on the city and its citizens, and the competition was accessible to both existing businesses and startups.

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- The competition's winning concepts received funds and help from the municipal government to develop and implement their solutions, and it was assessed by a panel of experts from academia, business, and government. In order to promote creativity and cooperation in the creation of smart city solutions, the competition also provided chances for networking and collaboration between competitors and city authorities.

2020: The COVID-19 pandemic accelerates the use of AI in smart cities, as cities use AI-powered systems to monitor public health, enforce social distancing, and manage the spread of the virus.

- The COVID-19 pandemic had a big influence on smart cities in 2020, speeding up the adoption of AI-powered technologies for tracking public health, enforcing social segregation, and controlling the virus's spread. A variety of AI-powered solutions were deployed by cities all around the world to assist them to deal with the problems the epidemic brought forth.
- Public health monitoring was one of the most significant uses of AI in the context of the epidemic. To track the movement of infected people and spot possible outbreaks before they spread widely, several cities employed AI-powered systems to track the virus' transmission. For instance, several towns deployed AI-powered systems to analyze information from social media and other sources to spot trends and patterns in the virus's spread.
- Several cities deployed AI-powered technologies to impose social distance and govern public places in addition to monitoring public health. For instance, some towns deployed AI-powered cameras and sensors to keep an eye on crowds and make sure people were keeping their distance from one another appropriately. In other cities, public transportation and other services were managed by AI-powered systems, which were able to change timetables and routes as necessary to ease traffic and guarantee safety.

2021: The European Union launches its "Digital Cities Challenge", which includes a focus on using AI to improve urban mobility, energy efficiency, and citizen engagement.

- The European Union introduced its "Digital Cities Challenge" in 2021 with the goal of assisting European towns in utilizing the potential of digital technologies, particularly artificial intelligence (AI), to address urban difficulties and enhance the quality of life for inhabitants. The project draws on the success of a comparable EU program that was implemented in 2017 and assisted several European communities in creating and implementing digital policies.
- The use of AI to increase urban mobility, energy efficiency, and public involvement is a major emphasis of the Digital Cities Challenge. Participating cities are urged to create

and put into practice AI-powered solutions that can aid in resolving these and other urban difficulties with the cooperation and direction of experts from the EU and other organizations.

- Urban mobility is one of the initiative's primary areas of concentration. The Digital Cities Challenge invites communities to create and put into practice AI-powered solutions that can lessen traffic congestion, enhance public transportation, and support environmentally friendly forms of mobility like bicycling and walking. AI-driven technologies can assist cities in streamlining traffic patterns, cutting down on travel time, and enhancing road safety.
- Energy efficiency is another area of concern. The Digital Cities Challenge invites municipalities to create and put into practice AI-driven solutions that can aid in lowering energy use and promoting the use of renewable energy sources. Cities can monitor and control energy use in buildings and other infrastructure, improve energy distribution, and encourage the use of renewable energy sources with the use of AI-powered technologies.
- Lastly, the Digital Cities Challenge supports cities in creating and putting into practice AI-powered solutions that can raise public involvement and engagement in municipal decision-making. Cities may use AI-powered systems to collect and evaluate public feedback, spot problem areas, and create better policies and programs.

Call for action:-

Join us in curating the next version of the IEEE SMC TC Newsletter! We invite all volunteers to help us collect and share the most exciting resources, articles, and ideas related to systems, man, and cybernetics. Whether you're an academic, industry professional, or simply passionate about the field, we welcome your input and contributions.

If you're a company working in this domain, we would be delighted to discuss the possibility of showcasing your product in our newsletter or sharing project opportunities with academics. Similarly, if you're an academic looking to collaborate on exciting industry or research projects, we invite you to reach out to us and share your ideas.

Let's work together to create a vibrant and engaging newsletter that showcases the best and brightest in the world of systems, man, and cybernetics. Join us today!

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