**Class Notes: ITAI 2372 – AI Revolution: Smart Cities and Transportation**

**Lecture delivered by: Professor Anna Devarakonda**

**Date: 20th February, 2025**

**Topic:** **AI Use Cases for Smart Cities**

**Overview -** The meeting covered various use cases for AI in smart city applications, including environmental monitoring, public transportation integration, remote healthcare, citizen engagement, and more.

1. **Environment Monitoring:**

* **Air quality sensors:** Detect pollution levels; deliver location-specific alerts to mobile devices, and help create cleaner urban air initiatives.
* **Water quality:** Ensures safe water for consumption by detecting contaminants.
* **Severe weather stations**: Provide real-time alerts for extreme weather conditions, enhancing disaster preparedness.
* **Noise level detection:** Monitors sound pollution for better urban planning and quality of life.

1. **Public Transport:**

* **Integrated Transit system:** Uses AI for optimizing routes, reducing delays, and integrating various modes of transport into a single seamless mobility platform.
* **Smart ticketing:** Contactless payment systems powered by AI, improving commuter convenience and reducing wait times, plan and pay for their entire public transportation journey through a single mobile app..

1. **Healthcare:**

* **Remote Health Monitoring:** AI-powered wearables and telemedicine solutions for continuous patient care without hospital visits.
* **Smart Hospitals**: Utilize AI for patient data management, robotic surgeries, and enabling proactive healthcare and faster emergency response.

1. **Citizen Engagement:**

* **Mobile apps:** Enable citizens to report issues, access services, and receive city updates in real-time.
* **Digital kiosks:** Provide information, wayfinding, and government services access at strategic urban locations.

**Unsolved Problems in Smart Cities AI**

* **Least perceived return on investment:** High upfront costs make it challenging for stakeholders to see long-term benefits immediately.
* **Ethical AI practices:** Need for bias fairness, transparency, and accountability in AI systems. Addressing fairness and non-discrimination in AI-driven decision making.
* **Regulatory ambiguities:** Lack of clear laws governing AI applications in urban infrastructure. Balancing innovation with appropriate governance.

**Problems created by AI in Smart Cities**

* **Machine learning biases:** AI systems can inadvertently introduce biases based on the training data used. This can lead to unfair or discriminatory decision-making in areas like citizen service delivery
* **Data Breaches:** The large amounts of personal data collected by AI-powered smart city systems pose risks around data security and confidentiality.
* **Lack of transparency:** AI’s complex decision-making processes can be difficult for the public to understand, leading to mistrust.