

Unveiling the Future: A Day in the Intellectually Evolved Tomorrowland

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In the near future, the world has witnessed a transformative revolution in mobile radio and vehicular technology. Heliopolis, a metropolis located in the western part of the Lungu Land, is not merely an important cluster of high-tech industries but a mirror reflecting the face of a technologically transformed world. Damon is a distinguished scholar living in Heliopolis, and his daily life paints a vivid picture of this near future.

As dawn breaks, the smart home system gently awakens Damon by gradually adjusting the light in the room according to Damon's circadian rhythm, replicating the natural progression from night to morning. The autonomous cooking system quickly prepares breakfast according to Damon's request. Meanwhile, a reconfigurable holographic surfaces-enabled holographic projection appears around the dining table, displaying Damon's schedule for the day and aggregating news from around the world, the latest academic advances and global research trends according to Damon's preferences.

Damon boards his self-driving car and drives on his way to the office. Traffic throughout the city is programmed and controlled by a digital twin-enabled intelligent transportation system called HyperNet. The system simulates the entire city's traffic in the virtual world and monitors

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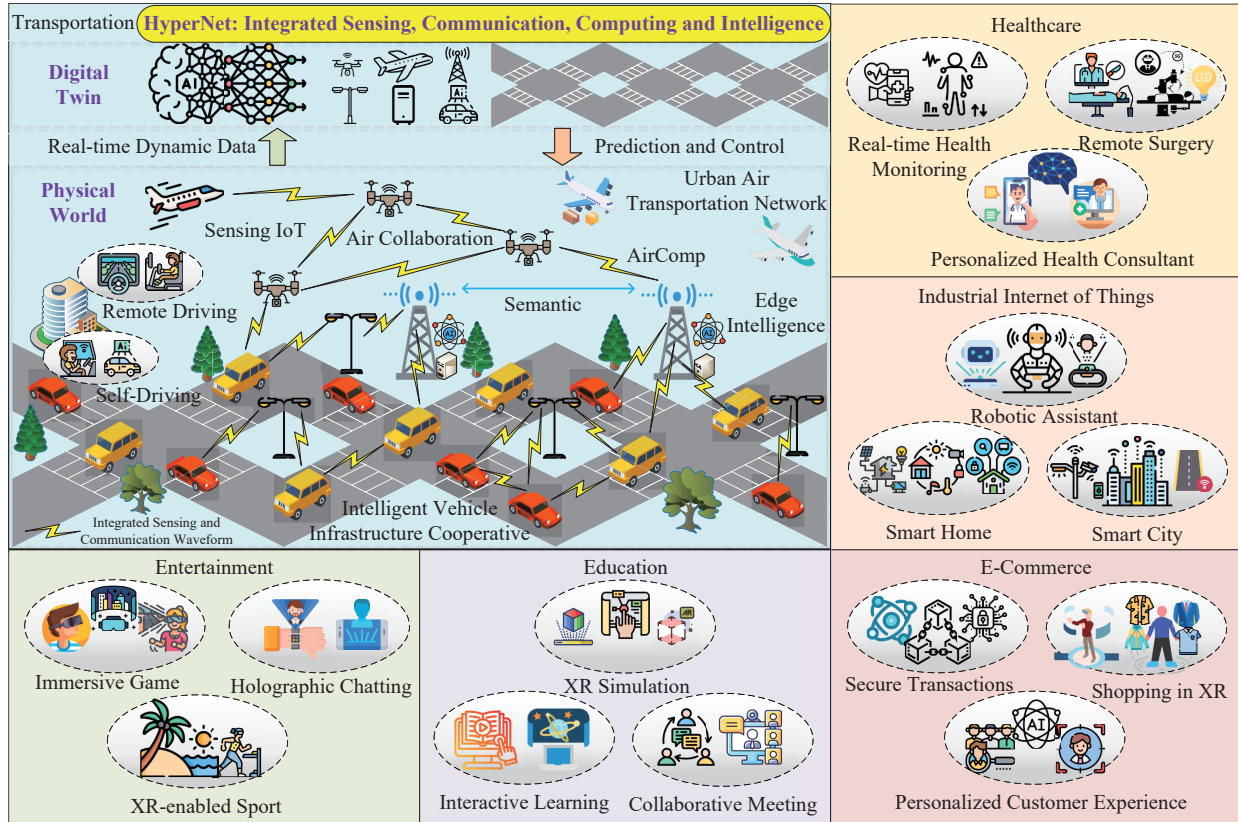


Fig. 1: Mobile radio and vehicular technologies for future wireless networks

real-world city traffic in real time, with optimal programming and decision-making in the virtual world being applied to real-world control with almost zero latency. HyperNet is essentially a product of the high degree of integration among sensing, computing and communication. Smart roads, roadside units, and self-driving vehicles embedded with sensors all collect massive amounts of information about their surroundings, which can be quickly understood at the semantic level by edge intelligent nodes. Intelligent vehicle infrastructure cooperative systems allow vehicles to interact with surrounding vehicles and facilities, enabling cooperative driving and autonomous decision-making. Thanks to the high degree of convergence of sensing, computing and communication, there are no traffic accidents and even few traffic jams in the city, even with all the self-driving cars whizzing by. Meanwhile, due to optimal programming of paths and efficient traffic, the carbon footprint of vehicles is greatly reduced and energy efficiency is improved, promoting a greener environment. Safe and efficient autonomous driving allows people to stop focusing on driving, freeing their minds to do more on their commute. For

those who want to drive manually, semantic communications and edge intelligence-empowered sensing Internet of Things enable their vehicles to monitor driver habits in real time, flagging signs of distraction, drowsiness, or risky behaviors, and thus improving safety. Additionally, a well-developed urban air transportation network is also one of the options for people to travel.

Upon arriving at the office, Damon walks into the virtual classroom and begins his teaching routine. His class is available to students around the world who have been matched to the class through a personalized interest analysis performed by the artificial intelligence (AI) algorithms. In the classroom, extended reality (XR) is used to enhance visuals and interactivity, and thus bringing knowledge to life in a dynamic way. In course experiments, XR not only saves physical materials, but also improves the safety and efficiency of experimental operations. In addition, due to ubiquitous high-speed connectivity, students can experience the course immersively even if they are in remote locations.

In the afternoon, Damon conducted a seminar with distinguished scholars from around the world on the direction of next-generation communication technologies. Facilitated by simultaneous interpretation, language is no longer a barrier and all can communicate efficiently using the most familiar language. In addition, the effectiveness of the academic discussions is enhanced by the collaborative 3D modeling shared environment.

With the seminar concluded, Damon followed a personalized exercise regime recommended by his AI-driven health consultant. The power of holographic technology transformed his room into a beach, allowing him to feel the sand under his feet, the wind in his hair, and the smell of the ocean. During his workout, Damon's wearable device performs constant health-monitoring on him and adjusts the intensity of his workout, the slope of the terrain, and even the ambient temperature of the beach in real time to optimize his health benefits.

As the evening descends, online shopping offers Damon another multi-sensory feast without ever leaving home. Thanks to XR, Damon can smell the aroma of food, touch the material of clothes, and even see the effect of his fitting. Purchases can be delivered quickly with the well-developed and fast transportation network, and these advances have revolutionized the retail industry, bringing about another change in the way shopping is done.

Damon's daily life would still be impossible without the support of other advanced technology behind the scenes. Due to the unpredictability of quantum states, quantum-empowered communication networks offer great protection for people's data privacy. Meanwhile, quantum entanglement-enabled quantum blockchain networks not only realize ultra-high-speed transmis-

sion, but also ensure invariance and transparency of transactions. Moreover, visible light communication is well-developed in environments that are sensitive to electromagnetic interference. In healthcare, remote diagnostics and even remote surgeries are also a daily routine for people.

As the day draw to a close, Damon reflects on his day. Similar to millions of other people, every aspect of their lives is swamped and intertwined with technology. In this era, Damon finds himself both a participant and a student, marveling at the world that technology has reshaped and excited about the possibilities of the future. The world is changing, and he is privileged to witness the revolution as a scholar. As he lies down to sleep, he knows that tomorrow will bring awesome technological advances and possibilities. The world is no longer what it used to be, it has been continuously evolving, reinventing, and improving itself, and Damon is thrilled to be a part of that journey!