

## Emerging Technologies

**Emerging Technologies** are the new technologies that will substantially alter the business and social environment. **Converging Technologies** represent previously separate technologies such as voice, data and video together so that they share resources and interact with each other, creating **new technologies**.

New technologies emerge due to innovations in various fields of technology. The innovations happen due to theoretical research and or due to commercial research and development. The new technology developed due to innovation may be a disruptive technology or just an incremental growth over the previously existing technology. For example, the LCD/LED display devices have completely replaced CRT display devices, the telegraph no more exists as there mobile telephony and they are disruptive technologies.

There is a list of currently emerging technologies, which contains some of the most prominent ongoing developments, advances, and innovations in the fields of Agriculture, Biomedical, Displays, Electronics, Energy, IT and communications, Manufacturing, Materials Science, Military, Neuroscience, Robotics and Transport and others.

All these technologies have been compiled in the following table from various sources to help young researchers to choose a research area for a research career.

Agriculture	Agriculture Robot, Closed Ecological Systems, Genetically modified Food, Meat Incubator, In vitro meat, precision agriculture, soylent (food substitute), vertical farming
Biomedical	Artificial uterus, body implants, prosthesis, cryonics, genetic engineering, hibernation or suspended animation, life extension, strategies for engineered negligible senescence, nanomedicines, oncolytic virus, personalised medicine, full genome sequencing, regenerative medicine, robotic surgery, stem cell treatments, tissue engineering, virotherapy, vitrification or cryoprotectant
Displays	3D displays, Ferro Liquid Display, Field emission Display, Holographic Display, Computer –generated holography, interferometric modulator display, Laser Video Displays, OLED Displays, Organic Light –Emitting Transistor, Phased Array Optics, Quantum Dot Display, Screen less Display- Virtual retinal display, bionic contact lens, eyetraps; surface conduction electron emitter display, thick film dielectric, electroluminescent technology, time-multiplexed optical shutter, volumetric display
Electronics	Electronic nose, e-textiles, flexible electronics, Memristor, Spintronics, thermal copper pillar bump
Energy	Vortex engine, airborne wind turbine, artificial photosynthesis, biofuels, concentrated solar power, electronic double layer capacitor, flywheel energy storage, fusion power, Generation IV reactor, Grid Energy Storage, Home Fuel Cell, Hydrogen economy, Lithium-air battery, Lithium iron phosphate battery, molten salt battery, molten salt reactor, nanowire battery, nantenna, silicon-air battery, smart grid, solar roadway, space –based solar power, thorium fuel cycle, wireless energy transfer, energy harvesting
IT and Communications	4G Cellular Communication, Ambient Intelligence, artificial brain, artificial intelligence, atomtronics, augmented reality, cryptocurrency, cybermethodology, emerging memory technologies, T-RAM, Z-RAM, TTRAM, CBRAM, SONORS, RRAM, Racetrack Memory, NRAM, Millipede Memory,

	Fourth- generation optical discs (3D optical data storage, holographic data storage), General purpose computing on graphics processing units, machine augmented cognition, exocortices, machine translation, machine vision, mobile collaboration, optical computing, quantum cryptography, radio-frequency identification, semantic web or answer machine, software-defined radio, speech recognition, three dimensional integrated circuit, virtual reality
Manufacturing	3D printing and Bio-printing, claytronics, molecular assembler, utility fog,
Materials Science	aerogel, amorphous metal, conductive polymers, femtotechnology, picotechnology, fullerene, graphene, high temperature superconductivity, High Temperature superfluidity, LiTraCon, Metamaterials, Metal Foam, Multi-function structures, Nanomaterials: Carbon nanotubes, programmable matter, quantum dots, silicone, super alloy, synthetic diamond
Military	Antimatter weapon, caseless ammunition, directed energy weapon, electrolaser, electromagnetic weapons, electrothermal-chemical technology, laser weapon, particle beam weapon, plasma weapon, pure fusion weapon, sonic weapon, stealth technology, vortex ring gun
Neuroscience	Ampakine, artificial brain, brain-computer interface, brain-reading, neuroinformatics, electroencephalography, neuroprosthetics
Robotics	Nanorobotics, powered exoskeleton, self-reconfiguring modular robot, swarm robotics, unmanned vehicle
Transport	Airless tire, alcubierre drive, alternative fuel vehicle, beam-powered propulsion, driverless car, flexible wings (X-53 Active Aeroelastic Wing, Adaptive Compliant Wing), Fluidic flight Controls, Flying Car, Hovertrain, Ground effect train, ion thruster, Jetpack or backpack helicopter, Maglev train, vactrain, Mass driver, personal rapid transit, physical internet, propellant depot, pulse detonation engine, reusable launch system, scramjet, solar sail, space elevator, spaceplane, supersonic transport, high altitude platforms, orion nuclear starship, fusion rocket, aerospacecraft, float to orbit, hyperloop, ET3
Others	Anti-gravity, arcology, artificial gravity, asteroid mining, atmospheric carbon dioxide removal, biometrics, bioplastic, cloak of invisibility, digital scent technology, domed city, force field, hypertelescope, Immersive virtual reality, inflatable space habitat, led, magnetic levitation, magnetic refrigeration, magnetorheological fluid, miniaturised satellite, synthetic biology, synthetic genomics, tricorder, vehicular communication systems

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