Nanotechnology

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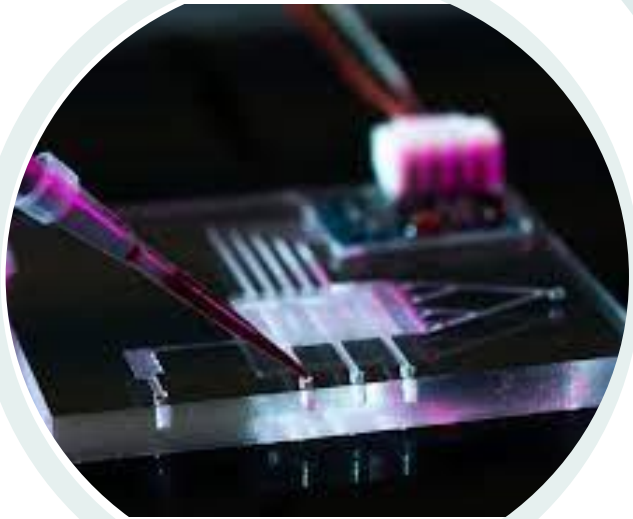
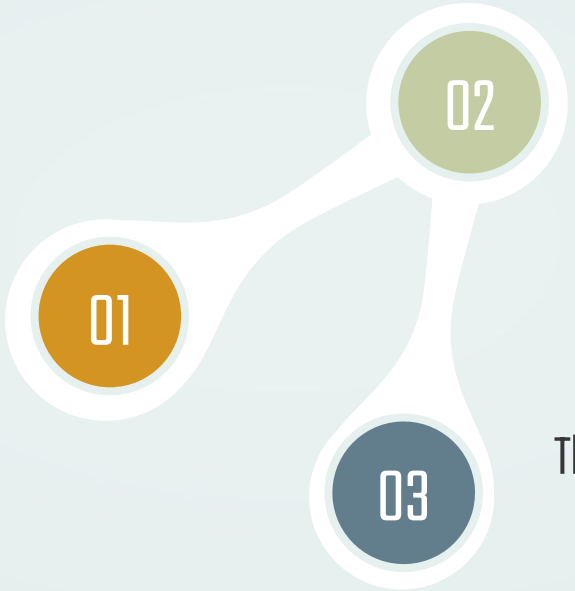
Nanotechnology:

the branch of technology that deals with dimensions and tolerances of less than 100 nanometers, especially the manipulation of individual atoms and molecules.

Why Nanotechnology?



Why should someone choose this topic



Growing field of engineering

- 1980's
- Exploration Opportunities

Shaping the Future

- Affordable housing
- Water solutions
- Medical

The numerous applications of Nanotech

- Medicinal
- Materials
- Electronics

Important Topics

02

Overview

01

Nano-Medicine

The medical application of nanotechnology to treat patients

02

Nano-Materials

Materials that are characterized by being between 1 to 100 nm in thickness

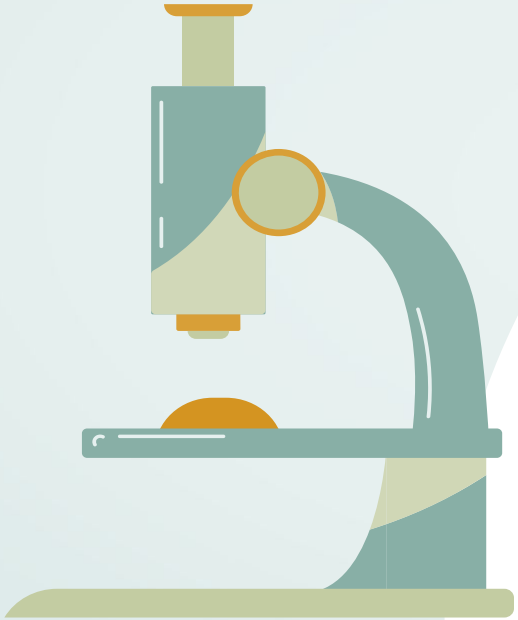
03

Nano-Electronics

The use of nanotechnology in electronics

Modern Applications

How is nanotechnology being used?



- Cancer treatment
- Gene sequencing
- Lightweighting of vehicles
- Sports equipment
- More efficient transistors
- Ultra-high definition displays

On Campus Resources

BioNanotechnology Lab

Allows interdisciplinary biological and micro and nanotechnology research experiments

Device Characterization Labs

Offers a variety of ultra-high-speed optical and electrical measurement and test equipment.

Cleanroom Labs

Contains equipment for the fabrication of high-performance devices encompassing a wide range of applications

Center for Nanoscale Science and Technology

Interdisciplinary research from atoms and materials to devices and systems

Classes Related to Nanotechnology

ECE 481

Nanotechnology - Fundamental physical properties of nanoscale systems.

ECE 487

Intro to Quantum Electronics - Application of quantum mechanical concepts to electronics problems.

ECE 444

IC Device Theory and Fabrication - Fabrication lab emphasizing physical theory and design of devices suitable for integrated circuitry.

ECE 488

Compound Semiconductors and Devices - Advanced semiconductor materials and devices; elementary band theory; heterostructures; transport issues.

04

Conclusion

Future of Nanotechnology

Vaccinations

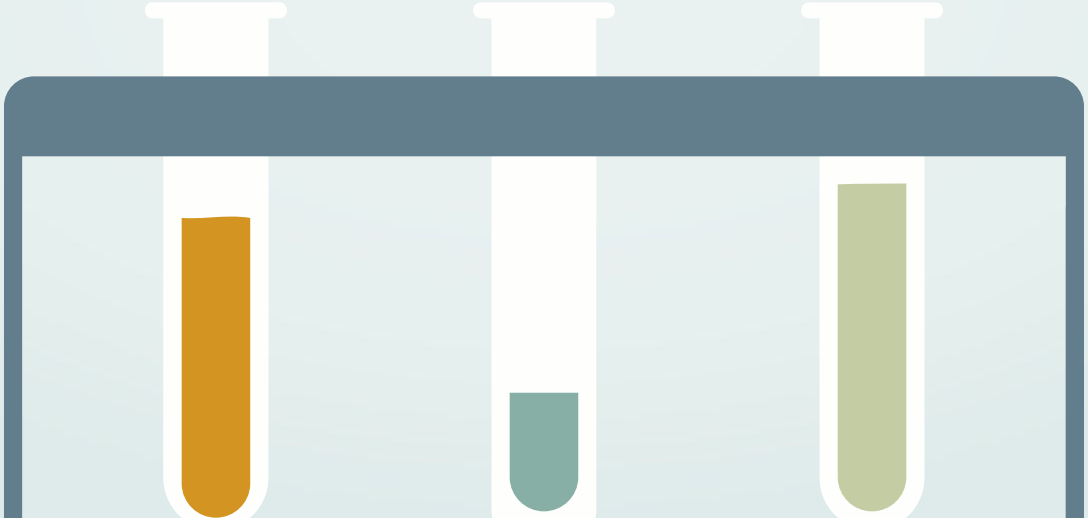
Vaccine delivery without the use of needles

Nanotube Scrubbers

Membranes to separate carbon dioxide from power plant exhaust

Growing Organs

Materials can be engineered to mimic complex tissues for transplants



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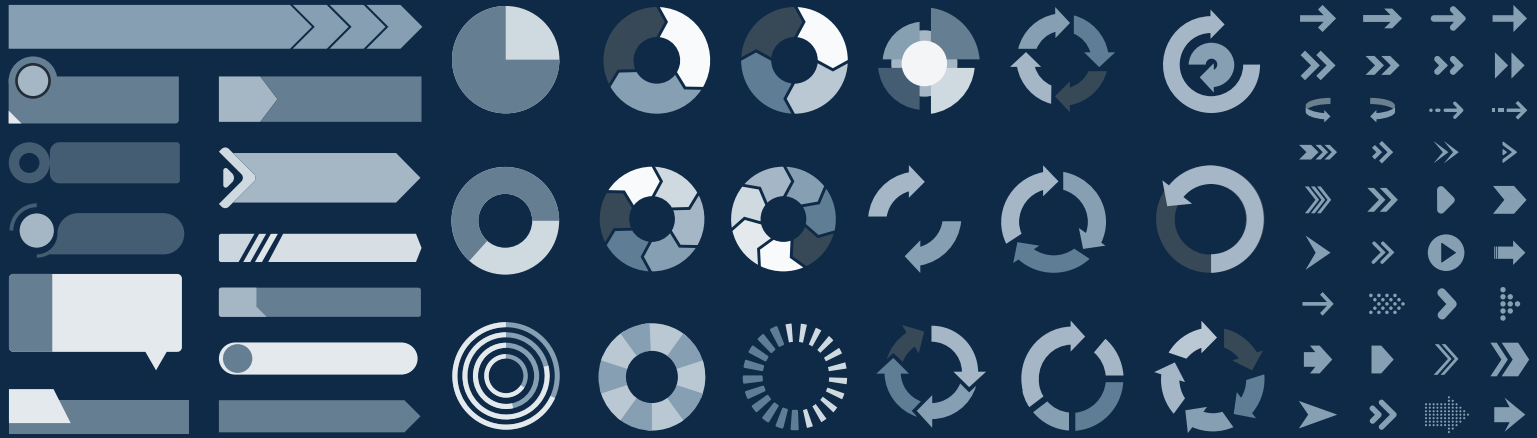






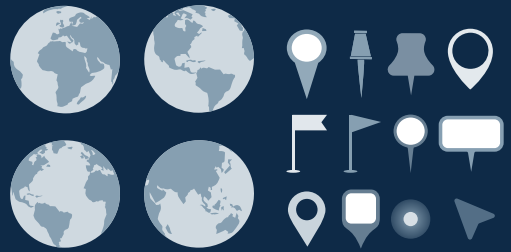

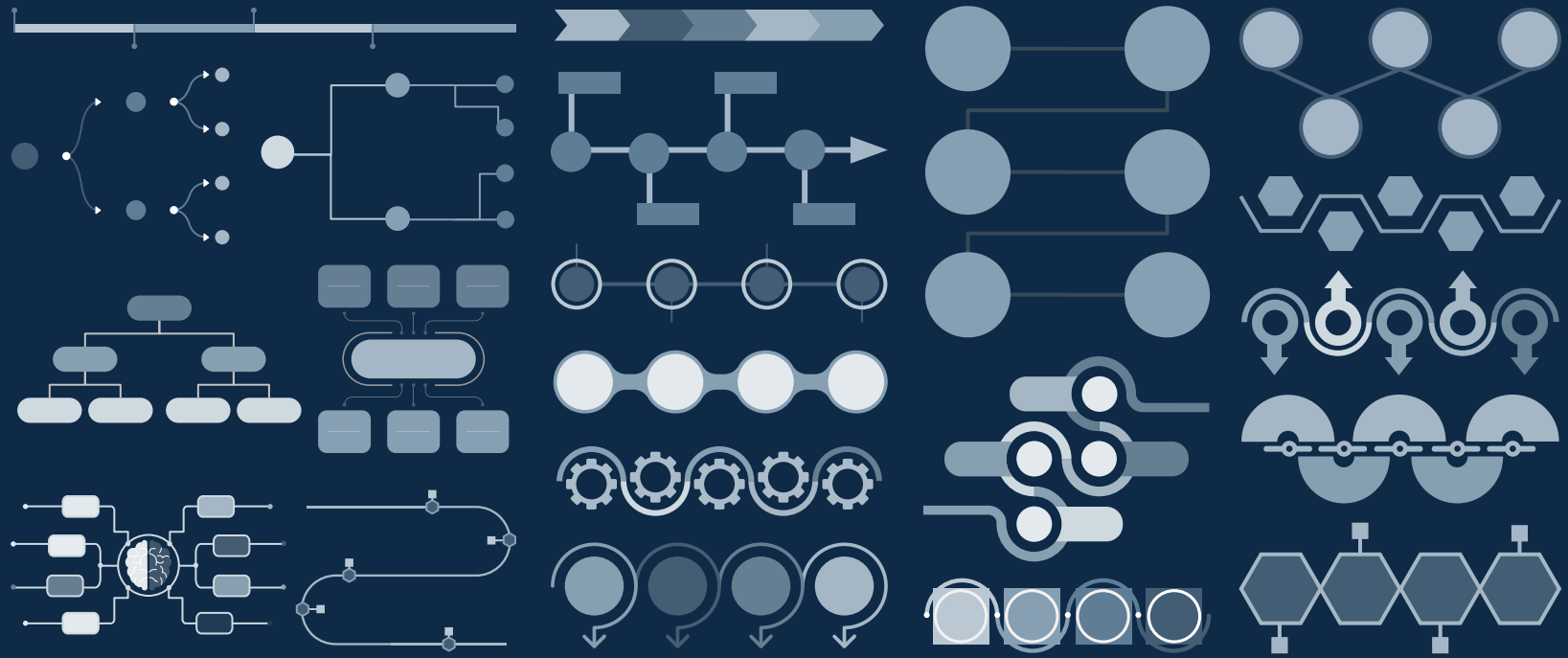

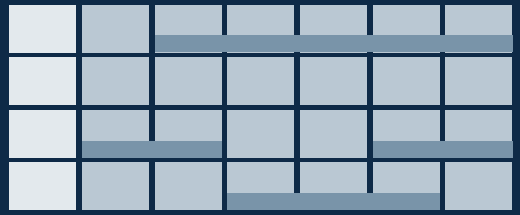

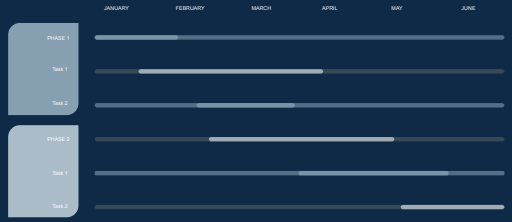
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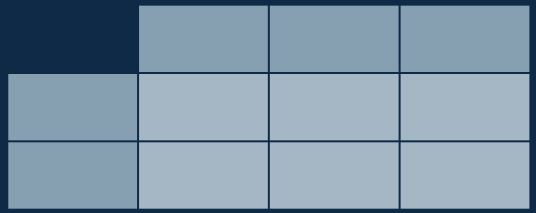

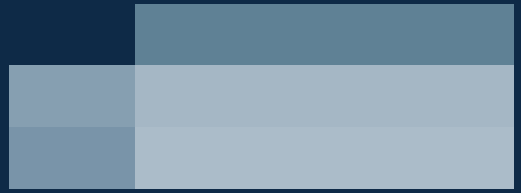

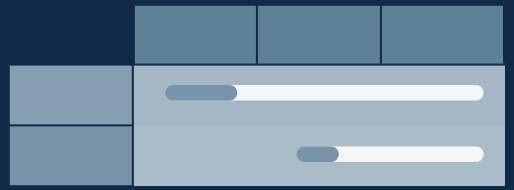

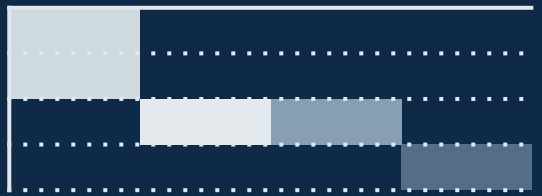

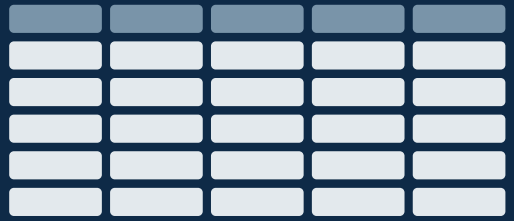

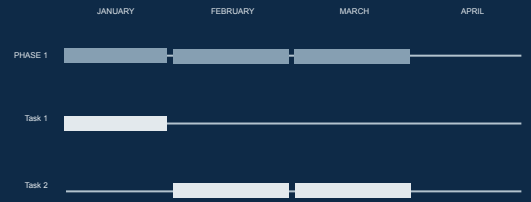
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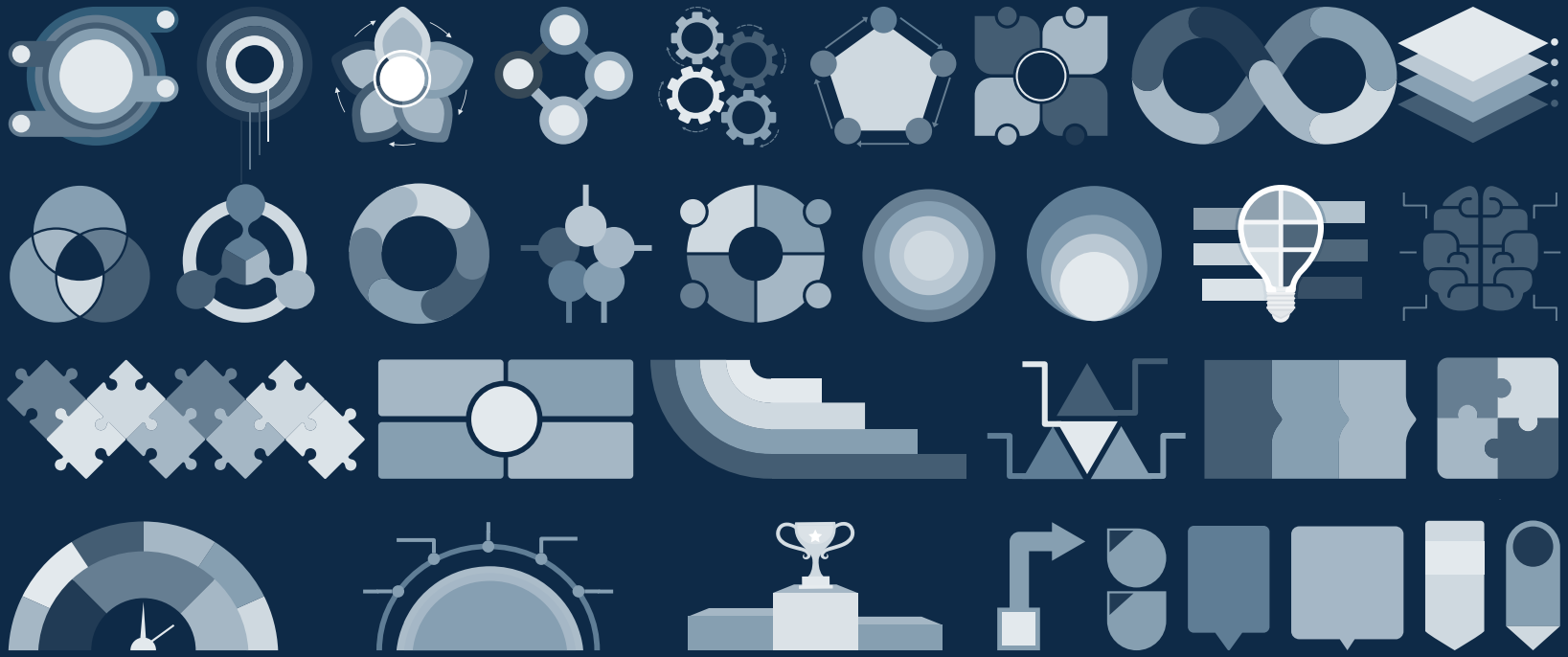

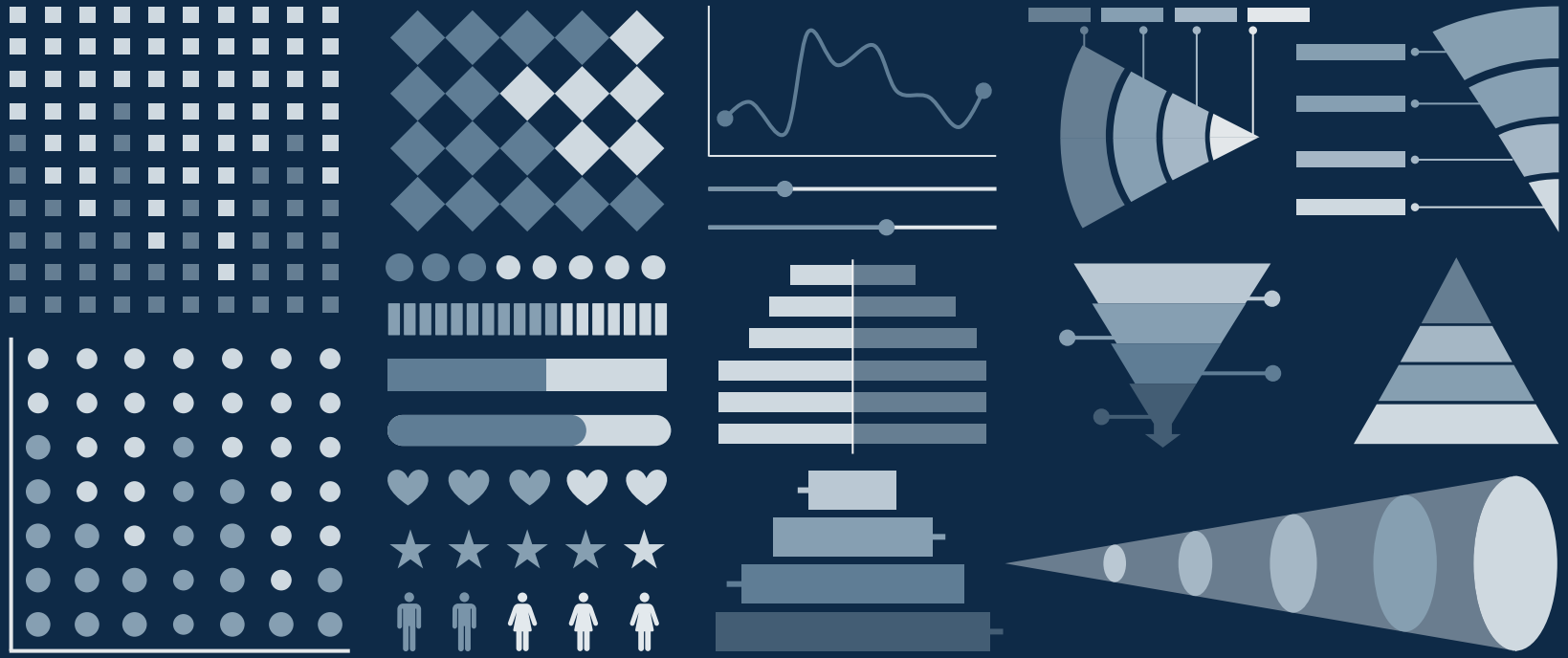

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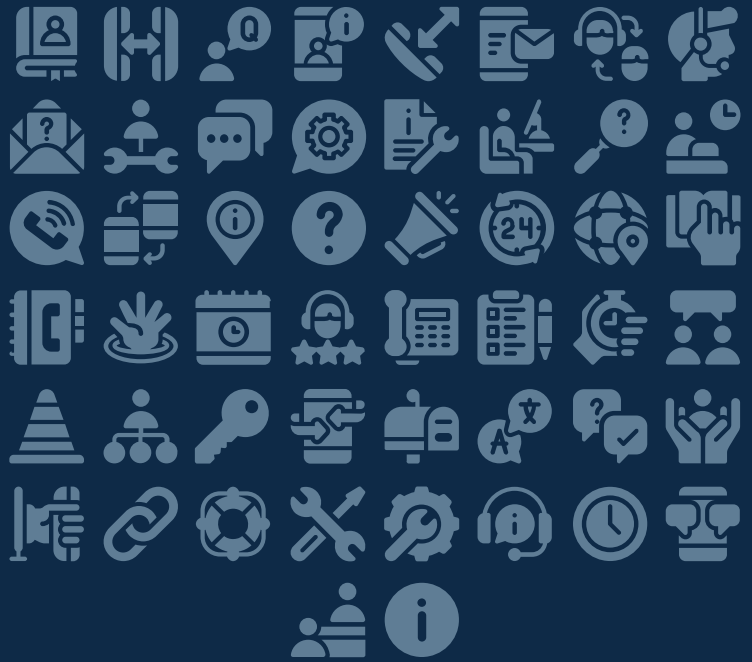

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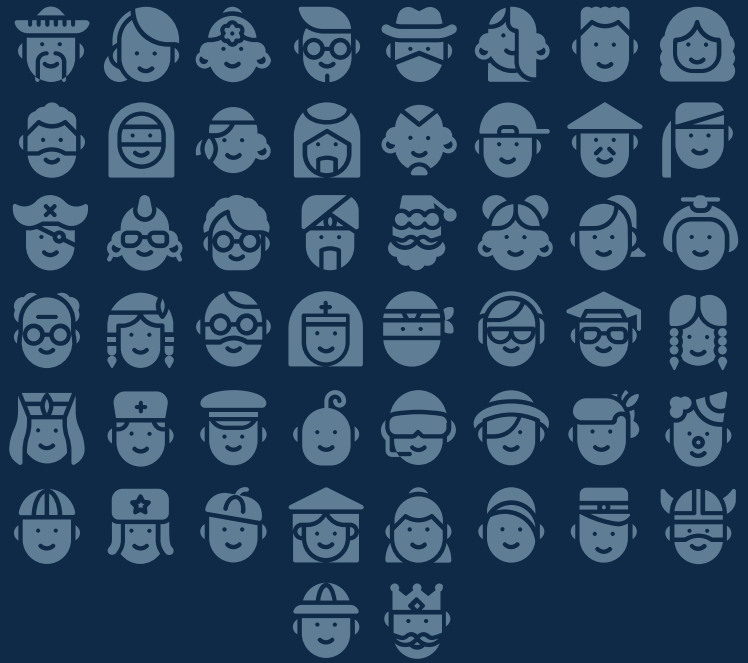

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