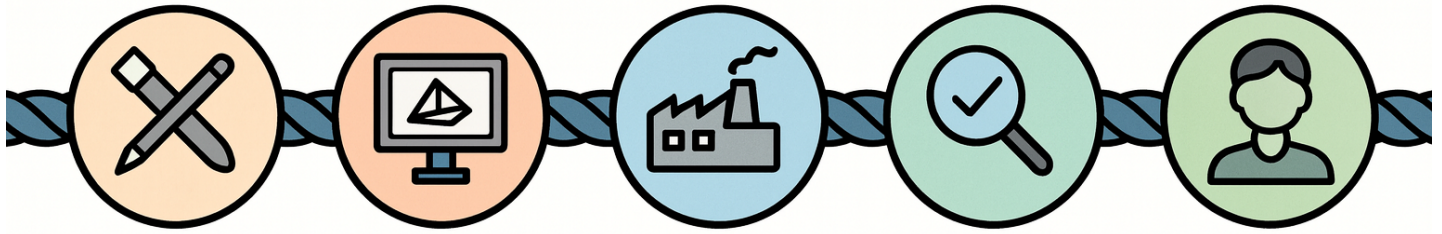


DIGITAL THREAD - FAST FOOTWEAR



Digital Thread is a data backbone that connects every stage of a product's life — from design and simulation, to manufacturing, quality checks, and even recycling.

It keeps information flowing so nothing gets lost and everyone stays on the same page.



Digital Thread keeps everyone on the same page — mistakes caught early, no wasted effort, faster solutions.

Digital Thread is like a **group chat** where everyone involved in making a product (designers, engineers, technicians, suppliers, customers) shares and sees updates in real time.

- In a group chat: everyone gets the latest info instantly. If something goes wrong, everyone knows immediately. If a change gets made, everyone can be ready for the change before it causes a problem.
- In email or separate messages: info gets lost, duplicated, or outdated. In manufacturing, this can lead to waste or downtime.

DIGITAL THREAD - FAST FOOTWEAR

Sneaker trends change fast. Big brands like Adidas use **Speedfactory** and the **Fast Footwear ecosystem** to design, build, and sell new sneakers in weeks. **How?** They use **digital thread**, a connected flow of data from design → production → sales → customer feedback → redesign.

Your Mission: Create your own sneaker company that uses digital thread to stay ahead of trends, plus build a small smart factory prototype using **Arduino + Python**.

Step 1 – Research

Learn about how fast fashion and social media have impacted the sneaker industry by [reading here](#). Investigate how Adidas is using advanced manufacturing to keep up with trends in sneakers that move faster than their traditional manufacturing approach could keep up with by reading [this article](#). How is **Adidas Speedfactory** different from traditional factories? How fast can it produce sneakers? What tech does it use? [Read about digital thread here](#). How can digital thread help a sneaker company keep up with fast-moving trends? Can digital thread provide real-time feedback to track trends and manufacturing data?

Step 2 – The Challenge

Create a **company plan** (name, logo, target trend, manufacturing strategy, and how you use digital thread). Build an **Arduino + Python prototype** of one smart factory component (or design your own). Pitch your idea and prototype to the class.

Step 3 – Design Your Component

Idea	Factory Role	Arduino Task	Python Task
Automated Quality Check	Test part size/weight	Sensor (ultrasonic or weight)	Log results & flag defects
Material Sorter	Sort fabrics/laces/soles	Color sensor + servo	Track inventory & alert
Custom Fit Scanner	Measure foot size	Ultrasonic sensors	Recommend shoe size, save data
Climate Control	Keep glue/fabric conditions	Temp/humidity sensor	Log & alert when out of range
Conveyor Counter	Track production output	IR sensor or encoder	Predict completion time
Feedback Collector	Gather ratings	Push buttons	Graph ratings & link to design
Your Own Design	Any role you choose	Your Arduino setup	Your Python processing

Step 4 – Deliverables

Company Plan – name, logo, manufacturing strategy, how you'll use digital thread

Prototype – Arduino + Python demo of one process that uses digital thread

Pitch – Present your company and prototype to the “investors” (your classmates)

Tips for Success

- Keep Arduino hardware simple but realistic
- Make sure Python reads from Arduino and processes data
- Use visuals in your pitch — sketches, slides, or posters
- Clearly show **where** digital thread fits in your process