QUICKSCAN - CANVAS

Large Scale 3D printing

NAME: Large Scale 3D printing
DATE: November 3, 2025 11:56 PM

DESCRIPTION OF TECHNOLOGY
Large scale FGF prints suffer from being printed in an unregulated process. Due to differences in layer temperature the layer adhesion gets compromised (cold lower layer) or sagging occurs (hot lower layer). Both situations compromise the quality, mechanical and geometric properties of the print. To solve this the printing speed is controlled through a PI controller that receives temperature data from a thermal…

HUMAN VALUES

This technology controls the print speed, something that was previously done manually by an operator. By taking that task away from the operator, the operator can focus on improving other aspects of the printing process.

TRANSPARENCY

Yes. The design report will be available to researchers, teachers and students at Fontys. It includes all the information about the goals it solves, the idea behind it and a detailed explanation on how the technology works.

IMPACT ON SOCIETY

Large scale FGF prints suffer from being printed in an unregulated process. Due to differences in layer temperature the layer adhesion gets compromised (cold lower layer) or sagging occurs (hot lower layer). Both situations compromise the quality, mechanical and geometric properties of the print. To solve this the printing speed is controlled through a PI controller that receives temperature data from a thermal camera. The controller ensures that the speed of the nozzle extrudes the next layer when the previous layer is at the ide…

STAKEHOLDERS

- LSAM Research group at Fontys
- Fontys budget management team

SUSTAINABILITY

Energy use is not taken into account as this is not an energy intensive process. The system uses minimal energy to function and no energy is being wasted. Improvements in energy efficiency are pointless.

HATEFUL AND CRIMINAL ACTORS

The technology can not be used in any way to break the law or avoid the consequences of breaking the law.

DATA

Thermal imaging data has some degree of inaccuracy. It has a most accurate reading distance but, when angled, not all points in the print will be at that distance and not all will have the same accuracy.

FUTURE

A widespread implementation of this system wouldn't have a huge impact on communities, habits or norms. It would mainly accelerate the research on LSAM and reduce the overall costs of both research and manufacturing making LSAM a more attractive manufacturing method for companies.

PRIVACY

The technology does not register any kind of personal data. It only stores thermal imaging data that is stored locally on the user's computer. This data is not sensitive and the protection of said data falls on the owner of the computer.

INCLUSIVITY

Yes. This project is bias in the sense that previous groups have already worked on improving it and most of the improvements come from following up on what they started.

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QUICKSCAN - CANVAS - HELPSIDE

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HUMAN VALUES

How is the identity of the (intended) users affected by the technology?

To help you answer this question think about sub questions like:

- If two friends use your product, how could it enhance or detract from their relationship?
- Does your product create new ways for people to interact?…

TRANSPARENCY

Is it explained to the users/stakeholders how the technology works and how the business model works?

- Is it easy for users to find out how the technology works?
- Can a user understand or find out why your technology behaves in a certain way?
- Are the goals explained?
- Is the idea of the technology explained?
- Is the technology company transparent about the way their…

IMPACT ON SOCIETY

What is exactly the problem? Is it really a problem? Are you sure?

Can you exactly define what the challenge is? What problem (what 'pain') does this technology want to solve? Can you make a clear definition of the problem? What 'pain' does this technology want to ease? Whose pain? Is it really a problem? For who? Will solving the problem make the world better? Are you sure? The problem definition will help you to determine…

STAKEHOLDERS

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by…

When thinking about the stakeholders, the most obvious one are of course the intended users, so start there. Next, list the stakeholders that are directly affected. Listing the users and directly affected stakeholders also gives an impression of the intended context of the technology.
…

SUSTAINABILITY

In what way is the direct and indirect energy use of this technology taken into account?

One of the most prominent impacts on sustainability is energy efficiency. Consider what service you want this technology to provide and how this could be achieved with a minimal use of energy. Are improvements possible?

HATEFUL AND CRIMINAL ACTORS

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

Can you imagine ways that the technology can or will be used to break the law? Think about invading someone's privacy. Spying. Hurting people. Harassment. Steal things. Fraud/ identity theft and so on. Or will people use the technology to avoid facing the consequences of breaking the law (using trackers to evade speed radars or using bitcoins to launder…

DATA

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into…

There are fundamental issues with data. For example:

- Data is always subjective;
- Data collections are never complete;
- Correlation and causation are tricky concepts;
- Data collections are often biased;…

FUTURE

What could possibly happen with this technology in the future?

Discuss this quickly and note your first thoughts here. Think about what happens when 100 million people use your product. How could communities, habits and norms change?

PRIVACY

Does the technology register personal data? If yes, what personal data?

If this technology registers personal data you have to be aware of privacy legislation and the concept of privacy. Think hard about this question. Remember: personal data can be interpreted in a broad way. Maybe this technology does not collect personal data, but can be used to assemble personal data. If the technology collects special personal data (like…

INCLUSIVITY

Does this technology have a built-in bias?

Do a brainstorm. Can you find a built-in bias in this technology? Maybe because of the way the data was collected, either by personal bias, historical bias, political bias or a lack of diversity in the people responsible for the design of the technology? How do you know this is not the case? Be critical. Be aware of your own biases.…

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