**Print line direction as a polarization filter**

**Interactive custom packaging**

**Metamaterial visual output**

Shape-Memory Alloy in printing

**Slow sensing**

Biodegradable, printable, living circuits

**Moire tracking**

Conductor,

thermal / lighting sensor

Autodesk 360

# Idea

Digital Fabrication

Interactive packaging designs

Design and fabricate

Cardboard

1. 1 concrete plans on how to explore the ideas
   1. What is interesting and novel about it
   2. Develop lines of thought around exploring ways to test the idea
   3. Refine these possible explorations into manageable chunks suitable for your project
2. 2
3. 3

# Possible Applications

Possible future: If it was already done and perfected by someone else, what would it enable that is not currently possible now or is it too hard.

More specific version

Lightning sensor on the object so the customer can be able to read the context on the object no matter what lighting is in the around environment

.

Laser cutting cardboard, which can be folded or assembled into an object.

Similar idea we have thought was to design a package that can be dissembled into pieces and attach into another object.

# Related Papers

Title: Radio-Frequency-Identification-Based Intelligent Packaging: Electromagnetic Classification of Tropical Fruit Ripening

Authors: Cecilia Occhiuzzi; Nicola D’Uva; Simone Nappi

URL: <https://ieeexplore.ieee.org/abstract/document/9159579>

Title: The Role and Importance of Packaging and Labeling in Assuring Food Safety, Quality and Regulatory Compliance of Export Products II: Packaging & Labeling Considerations

Authors: Andre Gordon; Rochelle Williams

URL: <https://www.sciencedirect.com/science/article/pii/B9780128142721000073>

Title: Using Technology in Smart and Intelligent Food Packages as a Communicational Tool with Consumers

Authors: Dina Elkhattat; Mervat Medhat

URL: <https://ieeexplore.ieee.org/abstract/document/9443994?casa_token=xr3XwgIyGwgAAAAA:O_iwrrmASfaSEhyImF6mspQFK5GvsdtXGDY79kJDz4Hq0RAHrLsdYZKS27mSe-tPiR1VBT3Zp1SIyg>

Increase the interaction with consumers and help them to ensure the quality of the product and interact with them technologically through sensors of the active packaging.

Increase interaction in three main stages: sensation, attraction and functionality.

Title: Smart Packaging: definitions, models and packaging as an intermediator between digital and physical product management

Authors: Justina Lydekaityte, Torben Tambo

URL: <https://www.tandfonline.com/doi/abs/10.1080/09593969.2020.1724555>

Title: Extended User Interface: NFC-Enabled Product Packaging for Enhanced User Experience

Authors: Justina Lydekaityte

URL: <https://link.springer.com/chapter/10.1007/978-3-030-50344-4_21>

Title: New Plans for Cans

Authors: Foreman, Marvin

URL: <https://www.proquest.com/docview/2409181050?pq-origsite=gscholar&fromopenview=true>

Digital print for beverage cans,

Title:

Title: Fragile! Handle with Care: The Morse Things

Authors: Doenja Oogjes, Ron Wakkary, Henry Lin, Omid Alemi

URL: <https://dl.acm.org/doi/abs/10.1145/3357236.3395584?casa_token=luevG-GubAcAAAAA:DENkvO6pWsuvlzx7YC0tU2moIYWjgAHlJ5iSWmD-4cxqoLX5bzgtlutNRp2EQTjiJeVK7EPNEIjUUA>

When drone deliver things to customers, how to

Title: Optimization of Computer Aided Teaching System for Packaging Design Major

Authors: Su Li, Weiqi Qi, Ying Xiong

URL: <http://cad-journal.net/files/vol_18/CAD_18(S2)_2021_69-79.pdf>

Paper information (title, authors, URL)

How the paper is related to the idea

What conceptual and / or technological approach the paper took

What the skills, knowledge, and resources you think were involved in the work

What the authors did not do – what shortcuts did they took, what parts of the idea were only lightly sketched in or were unimplemented, what details were left to future work and so on.

A Versatile Package Recommendation Framework Aiming At Preference Score Maximization

<https://link.springer.com/article/10.1007/s12530-018-9231-2>

<https://isl.anthropomatik.kit.edu/pdf/Fuhrmann2020.pdf>

# Potential Explorations

Prove a single, novel concept not to design a product or service.

What is the core concept of this exploration? Reduce it to the basics as much as possible!

What is the main conceptual and/or technological approach? That is, what would you do to explore the idea?

What skills, knowledge, and resources will be necessary?

Do you have any of the skills and knowledge? Are the resources available to you?

What is the bare minimum of implementation necessary to prove the concept? What can you leave out and how can you cheat on the parts that are not the core concept itself?

What is the rough progression of exploration? What are the first few steps?

How will you decide if you have succeeded?