

Industrial Design Engineering

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Enschede

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Concept development of an interactive lamp for application in hotels

The aim of this study is to research different presentation technologies to find out how these technologies will have an added value for the guest in the hotel. The presentation technology will be used in the concept development of an interactive lamp for the company AlienTrick.

The idea must be researched to develop it further regarding the hardware, different sensors, actuators, materials, functionalities and type of interaction. The main question is ‘Which technical solution is feasible to implement? At the end of the project a proof of concepts needs to be delivered. Market research needs to be done to answer one the sub questions. For example, ‘what are the advantages and disadvantages of LED lighting technology, projection technology and OLED technology?’, ‘What type of hardware will the interactive have?’ or ‘What product functions should the system fulfil’ ?

Process

There are four phases presented in the study. The analysis phase, ideation phase, concept generation phase and prototyping phase. In the analysis phase market research has been done with regard to the different presentation technologies and the target group. Lastly, a morphological diagram was created. The analysis phase has resulted in the design brief. The design brief takes into account factors such as the functionality, usability, aesthetics and safety. The ‘testable criteria’ in the design brief will be used to check whether a concept has met a certain requirement.

Numerous 3D Solidworks models and sketches were discussed with AlienTrick. The analysis phase, together with the design brief and ideation phase has resulted into three different concepts: concept projection technology, concept LED lighting technology and concept OLED technology. All of the concepts mentioned and researched in this project have their own advantages and disadvantages. The projecting technology has a high resolution and is able to project videos, music and images. It has less functionalities, but is very complex due to the conic projection and use of mirrors. The LED lighting technology is easily achievable with existing technologies and because of its low pricing. The OLED technology is not suited in a hotel environment due to its sensitivity and short lifetime.

The different presentation technologies were given a score based on the selection criteria. The concepts were compared to each other based on their technical complexity and functions. LED technology scored the highest. A new concept was created that contains a gesture sensor and a NeoPixel RGB LED matrix.

There are two functional prototypes, which both look like lampshades. The prototype with the NeoPixel RGB LED matrix will be compared to the one with the pico projector. Testing the prototypes was done with different textiles, text, icons and Arduino electronics.



Conclusion

The technical solution that is feasible to implement is the LUKS lamp which contains a NeoPixel LED RGB matrix. Arduino sensors such as the PIR motion sensor or gesture sensor enables interaction between the lamp and the hotel guest. The interactive lamp provides relevant information with simple sentences and icons. For example, the device displays the news, weather forecast or information with regard to the hotel facilities and surrounding. The lampshade is covered with tweed wool, because this type of textile showed the best result.