

Use Cases

Medication habits (Jaro)

- **Description:** Notify user in case he forgot to take a pill / takes more. (useful information for doctors, esp. In case of elderly or case of people taking medication with high addiction ratio) SOTA would be next to the pillbox and in case the user opens it more than X-times, it would warn the user and possibly notify the doctor as well.
- **Changing the way we live:** Improves quality of life in families by insuring our significant others take medication when they are supposed to, preventing further deterioration of their health.
- **Importance: Medium**
 - *"The consequences of drug noncompliance may be serious in older patients. Estimates of the extent of noncompliance in the elderly vary, ranging from 40% to a high of 75%", "...Problems may also arise when dementia or depression is present, which may interfere with memory. The most common noncompliant behavior of the elderly appears to be underuse of the prescribed drug. Inappropriate drug discontinuation, furthermore, may occur in up to 40% of prescribing situations, particularly within the first year of a chronic care regimen. As many as 10% of elderly people may take drugs prescribed for others; more than 20% may take drugs not currently prescribed by a physician"* (<https://www.ncbi.nlm.nih.gov/pubmed/7836347>)
 - According to (<https://www.ncbi.nlm.nih.gov/pubmed/22739031>), results show that using a medication reminder device can improve medication adherence but further research is needed
 - *"Despite being untested, medication apps represent a possible strategy that pharmacists can recommend to nonadherent patients and incorporate into their practice."* (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3919626/>)
 - *"These findings provide strong evidence that a refill reminder system can be used successfully in a community pharmacy as part of a program to identify non-compliant patients and improve their compliance with chronic medication therapy."* (<https://www.ncbi.nlm.nih.gov/pubmed/10272531>)
 - *"All studies in our analysis suggest that reminder systems increase patient medication adherence, but none documented improved clinical outcomes. Further studies with longer intervention durations are needed to assess effects on clinical outcomes, as well as the sustainability of effects on patient adherence."* (<https://www.ncbi.nlm.nih.gov/pubmed/24506699>)
 - *"Our results indicate that an SMS medication reminder system is a feasible method, even in subjects with advanced PD."* (<https://www.ncbi.nlm.nih.gov/pubmed/24050614>) [most relevant as subjects had Parkinson Disease]
- **Implementation:** the robot would be placed in front of the pill box / box of tablets, being able to observe if there is any relevant movement in front of him and based on the frequency of taking the medicine (e.g. 1 pill a day) notify user if the frequency is not

observed. In case of taking medicine multiple times a day it would also monitor the time taken, so that the user does not take 2 pills at once instead of only one to supplement the missing dosage not taken in the morning.

- **Value for Investor:** the robot itself costs 2k pounds, so the target market is limited due to the high price; moreover people tend to be sceptical towards AI so it might not be the best investment unless targeting a very niche group (e.g. retirement houses for rich).
- **Competition:** quite a lot, the basic functionality is always the same but differs
 - Automatic medication dispensers: <http://www.epill.com/>, <http://www.pivotell.co.uk/>
 - Apps which remind users to take their drugs: <http://www.medisafe.com/>
 - (not exactly direct competitor) Pillboxes: <https://www.medfoliopillbox.com/>
 - **Advantages:** robot is connected to Wi-Fi 24/7, which means family / doctor can access patient's medical habits immediately to judge if the medication is being taken correctly and implement a strategy to fix / improve the habits in the spot. Moreover, compared to the apps above, it solves a problem of patients not knowing how to operate smartphones or just forgetting / struggling to input the details in. (common issue among elderly)
 - **Disadvantages:** high starting price - 2k pounds is quite large entry barrier to the market and "ordinary" people; configuration issues - is the application going to be pre-shipped on the robot or does user need to compile & install it on their own? Different medications have different schedules to take, is it convenient to have a big DB of all medications and their schedules? Different drugs are rebranded in different states, how to eliminate duplicates?
- **3 pillars:**
 - **Internet of Things** - the robot would be connected to the internet to be able to share the medication habits with family / doctor to ensure it is taken regularly; possibly to a web-site where the habits would be observed.
 - **Voice UI** - this use case involves Voice UI only one-way, as the robot would notify the user that he / she needs to take the medicine.
 - **Agent AI** - the robot would observe if the user has taken the medicine and if not decide what the next step is - to notify doctor? family?

Personal Chef (Shanice)

- **Description:** Act as the user's "cooking assistant", giving the user each step in recipes and helping the user in conversion of measurements. It saves recipes that users either load into the robot or access through Wifi from their device. Additionally, the robot can update a user's groceries list as the user is cooking, saving time as the user does not have to try to recall them afterwards. Reads out user's text messages as well when user is cooking. The robot can also look out for emergencies and injuries, contacting the appropriate number if they detect any.
- **Changing the way we live:** It reinvents convenience in the kitchen. People cooking often don't have the time to constantly check their electronic devices or books. A hands-free solution to this would allow these users to stay connected and concentrate on their cooking at the same time, reducing the need to multitask.

- **Importance: Medium**

- The number of electronic books has been increasing and so has the need for devices such as Kindle or applications such as iBooks. As this trend continues, writers are likely to move to this new, cost-efficient medium. (<http://www.pewresearch.org/fact-tank/2015/10/19/slightly-fewer-americans-are-reading-print-books-new-survey-finds/>)
- Demand for smart kitchen appliances is increasing as technology advances. Devices that suggest recipes, update shopping lists and analyse food have already been implemented for use in the kitchen. Sota would give an alternative to replacing a device you already have with a smart device. (<http://www.bibowater.co.uk/the-rise-of-the-smart-kitchen/>)
- According to this article, more fires and fire related injuries are caused in the kitchen than anywhere else in the house. Sota would be able to detect this early and call for assistance quickly. (<http://www.london-fire.gov.uk/SafetyInTheKitchen.asp>)

- **Implementation:** Robot should be placed somewhere in the kitchen. It can be connected to the user's phone / tablet / computer through Wifi. Pre-downloaded recipes can be accessed by asking the robot for them. If connected through Wifi, when a message is received, Sota notifies the user. If connected through Wifi, Sota can create notes (such as grocery shopping lists) and share it to the device through Wifi in an appropriate format. If not connected to Wifi, user can download recipes directly into Sota. The robot's camera would constantly be looking out for signs of emergency.

- **Value for Investor:** Once again, the robot's cost of £2k limits the target audience significantly. Although the implementation of smart kitchens is increasing, the market for that is still quite niche.

- **Competitors:**

- Samsung Family Hub fridge - approximately £5k, updates grocery shopping list and shares to Wifi-connected device, suggests recipes based on available ingredients, built in electronic timetable and post-it notes board. (<http://www.samsung.com/us/explore/family-hub-refrigerator/#specs>)
- Jibo Robot (not released yet) - updates grocery shopping list and shares to Wifi-connected devices, informs user of text messages, helps with conversion of measurements when needed (<https://www.jibo.com>)
- **Advantages:** Ability to multitask in the kitchen with help from the robot, prevents serious fire damage by reporting it quickly, user can easily be contacted by others
- **Disadvantages:** High starting price, limited language translation ability (to ensure accurate translation from numerous languages)

- **3 pillars:**

- **Internet of Things** - Sota can be used in this use case with IoT to connect to the user's smartphone and update the user's notes with a grocery list when the user requests.
- **Voice UI** - Takes in voice commands like "Read me" + recipe_name or "Add " + grocery_item + " to my groceries list and acts accordingly.

- **Agent AI** - If users have more than one Sota robot connected to others, Sota would use spatial recognition to determine which robot it should respond from. Sota would monitor its surroundings for any signs of danger or to interact with the user and use this understanding of its surroundings to decide what action to take at any time.

Personal assistant (Raja)

- **Description:** The SOTA can be used as a personal assistant. This will involve helping the user from the time he/she is up right to the time when they go back to bed. Some examples are that it can stream music depending on your mood, it can plan meetings and alert the user of any upcoming meetings and it can also control the smart home(IOT).
- **Changing the way we live:** This PA will help the user become much more efficient and focus more on tasks which actually matter. The PA can keep tabs on traffic and weather. Moreover it can also read the headlines to the user. The user can use SOTA to plan out the week and prioritize tasks accordingly.
- **Importance: Medium**
 - Businessmen and other people find it really difficult to find the right person who can assist them with their daily busy activities. SOTA can help out with this as it will provide all the services a human PA would and provide extra services as well such as setting alarms and timers. It is more than just a PA. Furthermore, hiring a PA would cost but buying SOTA as a PA would be a one time expense.
 - Having a virtual assistant like SOTA would help the user to focus on tasks which are much more important allowing him/her to improve on efficiency. You don't want to spend more time organizing rather than executing. SOTA can help improve the productivity.
 - Staff will probably require training but a PA will already be proficient with the latest tools and technology to do the job.
- **Implementation:** SOTA can be placed anywhere in the workplace or at home. The robot can then keep track of the users activities and tasks and alert the user of any news/meetings etc. It can be connected to the users mobile device or laptop through wifi. The user can then be alerted of messages or tasks in case the user is not near to SOTA.
- **Value for Investor:** SOTA tips towards the more expensive side and might not be for every user. In this scenario we are looking at it as a PERSONAL ASSISTANT to CEOs and businessmen who have no time to find the right person to help them with their day to day schedule. Considering this scenario i guess it would be a smart investment.
- **Competitors:**
 - **Google Home** - PRICE: £130 - Provides various streaming services, web search and multiple commands. It also syncs music to multiple devices. It is smart home compatible and allows customizability.
 - **Amazon Echo** - PRICE: £49 - Provides various streaming services and is also smart home compatible. Provides weather information. Echo also provides

information on traffic. Provides services such as setting timers and alarms. Also allows the user to order food just by speaking.

- **Advantages:** Both of the above are much cheaper than SOTA. Google home provides customizable appearance which can be quite difficult to provide with the SOTA.
- **Disadvantages:** Both Google home and Amazon echo can be used in offices but they are more tailored for home use. SOTA in this case will be tailored for office use.

- **3 pillars:**

- **Internet of Things** - The robot can be connected to the users phone/laptop to alert the user about any upcoming tasks or meetings in case the user is not near SOTA.
- **Voice UI** - Voice UI in this use case is a 2 way process. The user can communicate with SOTA and likewise e.g. the user can request for a weather update and the SOTA can respond with current weather conditions.
- **Agent AI** - The SOTA can use the camera to read users emotions and play music or set the lighting accordingly.