

Ministry of Education and Science of the Republic of Kazakhstan
Suleyman Demirel University



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**Development of audio journaling application
Memento for people with cognitive impairments**

A thesis submitted for the degree of
Bachelor in Information Systems
(degree code: 5B070300)

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Abstract

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Аңдатпа

Головкиннің әуесқой мансабы ұзаққа созылды әрі қанық, оқиғаға толы болды. Генадий бокспен 8 жасынан бастап айналыса бастады. 1993 жылы оны облыстық бокстан өткен жарысқа оның бапкері жіберген болатын. Соңында осы сайыстан 3 жеңіс әкелді. Бұдан кейін ол облыстық, мемлекеттік және халықаралық бокстан жарыстарға үміткер болып қатыса бастады. Осы уақытқа дейін Генадий Головкин өзінің қатысқан 350 жекпе-жегінде тек 5 рет қана жеңіліске ұшыраған болатын. 19 жасында шығыс боксында бірінші орын алады да, 2002 жылы бұл жеңісін тағы бір мәрте қайталайды. 2003 жылы Таиландта өткен боксшылар жекпе-жегінде өзінің 4 қарсыласының екеуін нокаутқа жібергені үшін бірінші орынды алады.

Аннотация

Повседневная практика показывает, что начало повседневной работы по формированию позиции играет важную роль в формировании модели развития. Значимость этих проблем настолько очевидна, что консультация с широким активом играет важную роль в формировании дальнейших направлений развития. Задача организации, в особенности же рамки и место обучения кадров в значительной степени обуславливает создание систем массового участия. Равным образом постоянный количественный рост и сфера нашей активности обеспечивает широкому кругу (специалистов) участие в формировании соответствующий условий активизации. Повседневная практика показывает, что новая модель организационной деятельности обеспечивает широкому кругу (специалистов) участие в формировании модели развития.

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Chapter 1

Introduction

1.1 Motivation

Nowadays, people are prone to depression due to many factors in this rapidly changing world. Social media, bad news, and constant information noise can cause at least apathy and frustration. Furthermore, the bulk of human beings do not self-reflect and are not aware of their state of mental health. However, in our country, not enough attention is paid to identifying and solving problems associated with mental illness, such as Alzheimer's disease or even a high suicide rate.

In Kazakhstan, people suffer from dementia ten times more often than official statistics admit. While the government ignores the growth of citizens with cognitive impairments, the disease becomes a serious social and ethical issue [1]. Results from the national survey of root suicide causes showed that teen suicide is very strongly associated with the poor mental health of children and adolescents. Health disorders such as depression, anxiety, and fear are frequently detected when examining the psychological state of minors [2].

These data suggest that the state of mental health of a person is practically not taken into account, although the problem under consideration is the scourge of our time.

According to a study in 2018 [3], testees who executed emotional-focused journaling were inclined to show a low level of mental distress and increased well-being. The study likewise showed a link between journaling and improved immune systems in patients whose lymphocyte counts increased after writing their thoughts.

Overall, we can conclude that even minor daily habits, such as keeping track of emotions in writing, might significantly prevent people from mental diseases.

1.2 Aims and Objectives

Based on the conclusions made in the previous paragraphs, we have set the following aims, which reflect what we hope to achieve, and the objective to achieve

these aims.

Aim: To develop the audio journaling application Memento for people with cognitive impairments.

Objectives:

- To extract the data from the prominent scientific records of the display of cognitive impairments and their consequences;
- To conduct a customer development interview and develop a respective user-friendly interface for the application;
- To choose an actual methodology and stack of the technology for further app development;
- To synthesize the collected data and create the Memento application;
- To conduct comprehensive testing of the system on the target audience.
- To identify new features for further improvement of the application.

1.3 Thesis Outline

The first chapter is the Introduction chapter. It provides insights into the motivation of the thesis, the aims and objectives set, and a brief overview of subsequent chapters.

Chapter 2 is for Literature Review and formulating the problem to solve.

The third chapter describes the solution to the problem and its methodology. It explains what methods we intend to use in researching and developing the application.

Chapter 4 provides insight into the implementation of the project and the contributions of each team member through a detailed specification of the application's structure.

The conclusion chapter emphasizes the importance of the developed system and further intentions to promote the Memento application.

Chapter 2

Literature Review

Nowadays emotional wellbeing and mental health are underestimated but have a crucial meaning. Recent studies showed that Kazakhstan has one of the highest suicide rates [4]. But such a high rate is caused not only due to labor, financial and economic factors but also because people don not treat their mental health as equally as physical. Also, as it will be shown down below mental health at a bad state might be one of the reasons of MCI (Mild Cognitive Impairments) and later dementia. This chapter concentrates on the research studies that relate to the mental health, mild cognitive impairments, mood disorders and the use of technologies in tracking those factors. Later on taking on an account the results of these studies we made a decision to form our solution in the way that directed our developing app in the course of mood tracking by the use of audio diaries.

2.1 Mood and mild cognitive impairments

Mood is a central aspect of mental health. Mood defines not only the current state of emotional being but also might cause serious issues. The systematic review with meta-analysis conducted that symptoms of depression and anxiety were more prevalent in people with MCI than in people with normal cognitive function, and increased the risk of progression from no cognitive impairment to MCI [5]. The study showed results regarding the effect of such symptoms on progression from MCI to dementia. Other study explores the relationship between behavior and daily mood of older adults with different levels of cognitive impairment across four weeks. The sample included persons with early stage of Alzheimer's disease (AD), persons with MCI and cognitively healthy persons (CH) [6]. AD and MCI adults showed lower mood than the CH group which leads to the conclusion that that there is a correlation between the mood and cognitive status.

As previous study showed mood might relate to the cognitive status. Sleep quality also relates to emotional and cognitive health. Sensor-based sleep and mood monitoring systems promise to prolong independent living of elderly people with declining physical and cognitive functions [7].

That is why it is important to track the mood. There is a study where 22 participants who had used mood-tracking apps were interviewed using a semistructured interview and card sorting task [8]. The study showed that users of mood-tracking apps were primarily motivated by negative life events or shifts in their own mental health that prompted them to engage in tracking and improve their situation. As a result using a mood-tracking app facilitated self-awareness and helped them to look back on a previous emotion or mood experience to understand what was happening. However, some users reported less inclination to document their negative mood states and preferred to document their positive moods. To avoid that we offer a solution with automatic mood definition.

But tracking the mood can be one of the challenges due to its subjective sources. Research on emotion is full of methodological limitations, as feelings can have non-discrete, ephemeral, and ineffable qualities. Mobile technology makes it possible to extend mood self-assessment from lab to real life rather, collecting mood data frequently, over long time, in variety of life situations [9]. There is a study focused on designing an app as a self-healing tool aiming to engage people in a series of music collecting activities plus journaling via a tangible recording audio book. These activities are informed by existing psychological evidences on music therapy [10]. While the authors focused not on mood tracking but rather healing through the music the other ones made a research on helping pregnant women with depressive symptomatology with the MTA app. The MTA app monitored activity, assessed mood and alerted obstetric providers of signs of worsening mood. Women who received telephone contact from a provider triggered by an MTA app alert were significantly more likely to receive a mental health specialist referral [11].

Audio diaries provide a method for capturing the sequential and varied experience of emotions as they emerge from everyday life [12]. The study shows how audio diaries might be used to capture sudden emotions that appears spontaneously and may reflect infamous or negative social views and experiences and processes of emotional reflexivity of everyday life.

2.2 Audio diary

Audio diaries offer a highly convenient means to capture real-time experiences and provide a rich record of conversational narratives [13]. Audio diaries makes it possible to provide a method where young people express detailed reflections on their day-to-day encounters as well as ordinary silenced topics, including hidden emotions [14]. In the another research young people recorded their experiences and reflections about growing up on microcassette recorders [15]. The explored studies have a common conclusion: audio diaries tend to reveal people's hidden feelings and make them openly talk about their deepest secrets which might release the psychological tension. Also, self-reflection helps to revise the feeling and thus

makes it possible to more easily experience negative emotions.

Chapter 3

BBBBB

3.1 B one

Gennady Gennadyevich Golovkin is a legendary middle weight boxer (see Figure 3.1)



Figure 3.1: Triple G

3.2 B two

3.3 B three

Chapter 4

CCCCC

4.1 C one

Monkey is a beast that can jump. See Appendix B.

4.2 C two

4.3 C three

Chapter 5

Conclusion

Everything is great, but there is a space for future work.

Appendix A

Appendix A Title

A.1 Theorem

A.2 Proof

etc. etc.

Appendix B

AppendixBTitle

Five little monkeys are jumping on the bed.

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