POLITEKNIK MELAKA

AUTOMATIC NOODLE SOAKER (NOODLOMATIC)

SARENJIVT A/L KRISHNAN

(11DKM23F1037)

DHAARMEN A/L SARAVANA KUMAR

(11DKM23F1028)

JABATAN KEJURUTERAAN MEKANIKAL

SESI I :2025/2026

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Laporan ini dikemukakan kepada Jabatan Kejuruteraan Mekanikal

sebagai memenuhi sebahagian syarat penganugerahan

Diploma Kejuruteraan Mekanikal

JABATAN KEJURUTERAAN MEKANIKAL

SESI I :2025/2026

AKUAN KEASLIAN DAN HAK MILIK

AUTOMATIC NOODLE SOAKER (NOODLOMATIC)

1. Saya, **SARENJIVT A/L KRISHNAN (NO KP : 050408-04-0387)** dan **DHAARMEN A/L SARAVANA KUMAR (NO KP :** [redacted] adalah pelajar tahun akhir **Diploma Kejuruteraan Mekanikal, Jabatan Kejuruteraan Mekanikal, Politeknik Melaka** yang beralamat di **No.2, Jalan PPM 10, Plaza Pandan Malim,75250 Melaka**.(Selepas ini dirujuk sebagai 'Politeknik tersebut')

2. Saya mengakui bahawa 'Projek tersebut di atas' dan harta intelek yang ada di dalamnya adalah hasil karya/reka cipta asli kami tanpa mengambil atau meniru mana-mana harta intelek daripada pihak-pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'Projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk penganugerahan **Diploma Kejuruteraan Mekanikal** kepada kami.

Diperbuat dan sebenar-benarnya diakui

oleh yang tersebut;)

SARENJIVT A/L KRISHNAN) ……..
(No. Kad Pengenalan : [redacted]) SARENJIVT A/L KRISHNAN
DHAARMEN A/L SARAVANA KUMAR) ……..
(No. Kad Pengenalan : [redacted]) DHAARMEN A/L SARAVANA KUMAR

Di hadapan saya, MD SAIFUDDIN BIN MD YUSOP ……
[redacted]
MD SAIFUDDIN BIN MD YUSOP

sebagai penyelia projek pada tarikh 21/11/2025

PENGESAHAN LAPORAN PROJEK

Laporan projek bertajuk ‘AUTOMATIC NOODLE SOAKER (NOODLOMATIC)’ ini telah dikemukakan, disemak dan disahkan sebagai memenuhi syarat dan keperluan penulisan projek seperti yang telah ditetapkan.

Disemak oleh:

NAMA PENYELIA: MD SAIFUDDIN BIN MD YUSOP

TANDATANGAN:  TARIKH: 21/11/2025

Disahkan oleh:

NAMA PENYELARAS:

TANDATANGAN: TARIKH:

APPRECIATION

First and foremost, I would like to express my deepest appreciation to everyone who has assisted and supported me throughout the completion of my Final Year Project (FYP) entitled “Automatic Noodle Soaker (Noodlomatic)”. This project would not have been possible without the guidance, encouragement, and cooperation of many individuals who contributed their time and knowledge in various ways.

I would like to extend my heartfelt gratitude to my supervisor, Mr. Md Saifuddin bin Md Yusop, for his continuous guidance, valuable advice, and constructive feedback throughout the entire duration of this project. His expertise and dedication have greatly helped me in understanding the technical and practical aspects of the project, as well as in improving my problem-solving and design skills. His patience and encouragement inspired me to complete this project successfully and on time.

I would also like to express my sincere thanks to my classmates and friends who have been very supportive, whether through sharing ideas, providing technical assistance, or offering moral support during challenging times. Their cooperation and teamwork created a positive environment that made the development process smoother and more enjoyable.

Finally, I would like to dedicate my deepest appreciation to my beloved family for their unconditional love, encouragement, and continuous support throughout my studies. Their trust, prayers, and motivation have been my greatest source of strength and perseverance in completing both this project and my Diploma in Mechanical Engineering.

ABSTRAK

Permintaan tinggi terhadap penyediaan mi segera di restoran Malaysia, khususnya di kedai mamak, telah menimbulkan cabaran seperti ketidakseragaman tekstur mi, pembaziran akibat rendaman berlebihan, penurunan produktiviti dapur, serta risiko keselamatan akibat pengendalian air panas. Untuk mengatasi isu ini, projek ini membangunkan Noodlomatic, sistem automatik perendaman mi segera yang meningkatkan kecekapan, ketepatan, dan keselamatan melalui automasi elektromekanikal.

Noodlomatic menggunakan penggerak linear (linear actuator) dengan struktur keluli tahan karat dan dikawal oleh mikropengawal Arduino. Sistem ini menggerakkan bakul mi secara automatik mengikut masa rendaman yang diprogramkan, disertakan dengan pemasa digital, LED, dan buzzer untuk memudahkan pengguna tanpa pengawasan berterusan.

Ujian menunjukkan prestasi sistem yang stabil, dengan tempoh rendaman optimum 15–19 minit dan ketepatan operasi 100%. Maklum balas pengguna menunjukkan peningkatan ketara dalam kecekapan, tekstur mi, kemudahan penggunaan, dan keselamatan.

Secara keseluruhannya, Noodlomatic berjaya mengurangkan pembaziran, memastikan kualiti mi yang konsisten, serta meningkatkan produktiviti dapur. Sistem ini berpotensi digunakan secara meluas di restoran dan dapur komersial, dengan potensi penambahbaikan masa depan seperti kawalan suhu automatik dan sambungan IoT.

ABSTRACT

The growing demand for instant noodles in Malaysian restaurants, especially mamak establishments, has exposed several challenges in manual soaking and cooking processes, such as inconsistent noodle texture, food wastage from over-soaking, reduced kitchen productivity, and safety risks from hot water handling. To address these issues, this project introduces The Noodlomatic, an automated instant noodle soaking system designed to improve efficiency, accuracy, and safety through electromechanical automation.

The Noodlomatic features a linear actuator mechanism integrated with a stainless steel soaking assembly, controlled by an Arduino-based system. The actuator precisely lowers and lifts a perforated noodle strainer based on programmed timing. A digital timer, LED indicators, and a buzzer ensure accurate and user-friendly operation. The design was developed using Autodesk Inventor, with prototype fabrication involving steel frame welding, pot integration, actuator mounting, and wiring setup.

Testing confirmed reliable system performance, with optimal soaking durations of 15–19 minutes and consistent actuator motion averaging 3.1 seconds per stroke. User evaluations showed complete satisfaction, highlighting significant improvements in efficiency, texture consistency, and safety.

In conclusion, the Noodlomatic successfully reduces manual effort, minimizes food wastage, and ensures consistent noodle quality. It holds strong potential for use in restaurants and commercial kitchens, while also paving the way for future upgrades such as programmable temperature control, IoT features, and multi-serving automation.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Food is the foundation of human survival, providing essential nutrients for health, energy, and growth. Beyond sustenance, it plays a crucial role in culture, tradition, and social interaction, shaping identities and communities worldwide. The global food industry is a major economic driver, generating employment and supporting livelihoods. However, challenges such as food security, sustainability, and wastage continue to grow, making innovation in food preparation and consumption more important than ever.

In Malaysia, food is more than just a necessity it's a way of life. The country's diverse culinary heritage, influenced by Malay, Chinese, Indian, and indigenous cultures, has created a unique food scene that unites people from all backgrounds. Whether in homes, hawker stalls, or restaurants, food is a symbol of togetherness and hospitality. The food industry is also a key pillar of Malaysia's economy, attracting both locals and international tourists with its vibrant and affordable dining options.

Mamak restaurants are a cornerstone of Malaysian street food culture, serving as social hubs where people gather to eat, chat, and watch football late into the night. These 24-hour eateries, run primarily by the Indian-Muslim community, offer a wide variety of dishes at affordable prices. From roti canai and nasi kandar to teh tarik, mamak food is an everyday favorite for Malaysians. Among their most iconic dishes is Maggi goreng, a stir-fried instant noodle dish that has become a staple on almost every mamak menu due to its quick preparation and bold flavors.

Maggi instant noodles are deeply ingrained in Malaysian food culture, loved for their convenience, affordability, and versatility. Whether served in a hot broth or stir-fried with eggs, vegetables, and proteins, Maggi is a go-to meal for students, workers, and families alike. In mamak restaurants, Maggi goreng has gained legendary status, with each restaurant putting its own spin on the dish. Given its high demand and fast turnover, finding ways to improve Maggi preparation efficiency is crucial for both kitchen operations and customer satisfaction.

1.2 PROBLEM STATEMENT

Instant noodles are a staple in many restaurants, particularly in mamak eateries, due to their quick preparation time and high demand. However, excessive waste due to overcooking has become a significant issue in these establishments. More than 20 portions of instant noodles are discarded daily because of overcooking, leading to unnecessary food wastage. This not only affects operational efficiency but also contributes to higher expenses and environmental concerns. A solution is needed to minimize wastage while maintaining the quality and consistency of the noodles.

Figure 1.1 Restaurant(2025)

Another major issue is the inefficiency in the cooking process. The chef must constantly monitor the cooking time, ensuring the noodles are cooked perfectly. This waiting period limits the chef's ability to multitask, reducing overall kitchen productivity. In a fast-paced environment like a mamak restaurant, where multiple orders need to be prepared simultaneously, this dependency on manual monitoring results in slower service and inefficiencies. A more efficient cooking system would free up the chef's time to focus on other tasks, ultimately improving kitchen operations.

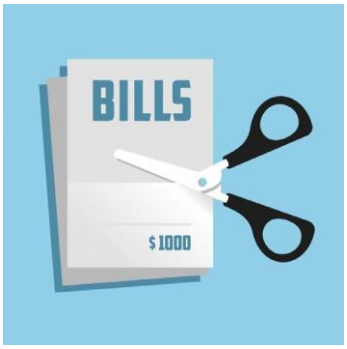

Figure 1.2 InCharge(2024)

Furthermore, the need to recook instant noodles after overcooking adds to the restaurant's operational costs. Every wasted portion translates to additional expenses, affecting profitability. This problem is especially significant for businesses operating on tight margins. By implementing a system that ensures consistent cooking times, unnecessary costs can be reduced, and overall business sustainability can be improved.

To address these challenges, an automated instant noodle cooker with adjustable cooking time could provide a practical solution. This system would eliminate human error in timing, ensure consistency in food quality, and allow chefs to focus on other kitchen tasks without worrying about overcooking. By reducing waste and improving efficiency, this innovation could significantly enhance restaurant operations while cutting costs and maintaining customer satisfaction.

1.3 OBJECTIVES

The objective of this project is to design and develop an automatic instant noodle soaking device that:

i. Eliminate soggy instant noodles, ensuring complete prevention of overcooking.

ii. Allows chefs to perform other tasks while the noodles are being soaked

iii. Prevents waste by ensuring noodles do not become unfit for consumption,achieving 100% reduction in loss.

1.4 SCOPE

This project is designed with specific limitations to ensure efficiency and practicality. It focuses on optimizing the cooking process within a controlled environment, considering capacity, location, and cooking time.

I. Can cook a maximum 10 packs of instant noodles only

II. Research is done at restaurant at area Plaza Pandan Malim,Melaka.

III. Using plain water, it takes 15 minutes to cook.