

**nurus**

# Sponsorship Report

Project Results for NURUS

**Presented by:**

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# 1 Introduction

In this report, we will detail our sponsorship agreement with NURUS, including the terms of the agreement, the benefits we received, and the results of our collaboration.

# 2 Our Team






Name	Major	LinkedIn
Metehan İçöz	Mechanical Engineering	
Muhammed Sezer	Electrical - Electronics Engineering	
Şevval Belkıs Dikkaya	Electrical - Electronics Engineering	
Ecem Ataman	Aerospace Engineering	
Zeynep Keleş	Electrical - Electronics Engineering	

Table 1: Team Participants

As the fields of robotics and AI continue to evolve and grow, we remain dedicated to staying at the forefront of these advancements. We stay up to date with the latest developments and trends in these fields, and we are committed to adapting our skills and expertise to meet the needs of the industry. By keeping a pulse on the latest technologies and innovations, we can ensure that we are well-equipped to tackle any challenge that comes our way and contribute to the continued growth and success of these fields.

Our team has an extensive background in robotics and AI, with a combined experience of 5 years studying and working in these fields. We have gained invaluable knowledge and skills through our work at ROMER, the METU Robotics Center, TED University, and METU’s Electrical and Electronics Engineering department. In addition, we have received support from leading research institutions such as TUBITAK and METU.

Last year, we secured first and second place in the AI in Transportation competition, and we are excited to continue our success in the upcoming UAV competition. As a team, we believe in the power of collaboration and helping each other succeed, and this philosophy has been the driving force behind our achievements not only in competitions but also in our academic and professional careers.

To ensure that we have the resources we need to create the best possible UAV, we are proud to have been sponsored by NURUS for both the AI competition and the Fighter UAV competition. With their support, we have been able to use the highest-quality materials and equipment in our designs, giving us an advantage over other teams.

As we continue to work towards our goals, we remain committed to our values of sharing and encouraging others.

# 3 Background

Our university team was faced with the complex task of designing, building, and coding a fully autonomous UAV for the Teknofest competition. With our extensive background in robotics, AI, and design, we were well-equipped to take on this challenge. We utilized our expertise in advanced algorithms based on Pymavlink, ROS2, and other cutting-edge technologies to develop a high-performing and innovative UAV that was capable of meeting the competition’s rigorous standards.

In addition to our technical expertise, we also drew on our design experience to create a visually stunning UAV that was both functional and aesthetically pleasing.

As the UAV industry continues to grow and evolve, we remain committed to staying at the forefront of these developments. We keep a close eye on the latest trends and advancements in the field, and we are always looking for new ways to push the boundaries of what is possible. By staying up to date with the latest technologies and innovations, we can ensure that we are well-positioned to continue making significant contributions to the UAV industry.

## 4 Sponsorship Agreement

Our sponsorship agreement with NURUS began in December 2022 and will conclude in April 2023. As part of the agreement, NURUS stipulated that we include their logos on both the aircraft and our team t-shirts. Additionally, we were required to create a promotional video for NURUS at their factory.

In exchange for their sponsorship, NURUS provided us with a budget of 20,000 TL, as well as full access to their composite section in their factory. This allowed us to utilize the latest cutting-edge materials and equipment to construct a high-performing UAV that met the rigorous standards of the competition.

Throughout the sponsorship period, we maintained a close working relationship with NURUS, keeping them updated on our progress and sharing regular updates with them on our team's accomplishments. Their support and guidance were instrumental in helping us achieve success in the competition, and we are grateful for their ongoing partnership.

Looking ahead, we are excited to continue building on our relationship with NURUS, exploring new opportunities for collaboration and pushing the boundaries of what is possible in the field of aviation and technology. By working together, we can continue to drive innovation and make significant contributions to this rapidly evolving industry.

## 5 Benefits

Through our collaboration with NURUS, we were able to benefit from their expertise and resources, including their workspace and equipment. We were able to learn from NURUS' experienced team, who provided guidance and mentorship throughout the design and build process. NURUS' advanced equipment and materials allowed us to push the boundaries of what was possible, resulting in a truly innovative and cutting-edge aircraft.

The production and workplace support we received from NURUS has had a game-changing effect for us. With access to their factory, we were able to work in a professional environment, with specialized equipment and materials at our disposal. This allowed us to create an aircraft that was not only technically superior but also aesthetically impressive.

The video we created in NURUS' factory not only showcased our partnership but also provided valuable exposure for both the team and NURUS. It allowed us to share our knowledge and experience with a larger community of UAV enthusiasts and industry professionals.

We believe that maintaining a positive and collaborative relationship with NURUS beyond the sponsorship period can be mutually beneficial. By continuing to work together, the team can stay up-to-date on the latest developments in the industry, while also providing valuable feedback to NURUS on their products and processes.

## 6 Factory Experience

During our time at NURUS, we had the opportunity to benefit from their expertise and resources, which had a game-changing effect for us. The production and workplace support we received from NURUS allowed us to create a superior aircraft compared to our competitors.

We had access to their workspace and equipment, which allowed us to work on our aircraft in a professional setting. We were also able to collaborate with their team members who provided us with valuable insights and guidance on how to improve our aircraft. Thanks to NURUS' sponsorship, we were able to take advantage of the following opportunities:

- Using their top-quality materials, including fabric, carbon, epoxy, and other composites, to build our aircraft
- Using their tools and equipment to manufacture and assemble the aircraft, including a CNC machine, a laser cutter, and a 3D printer
- Working closely with their team members to troubleshoot any issues and optimize our design
- Access to NURUS' network of industry professionals and potential collaborators
- Exposure to new technologies and manufacturing processes, including additive manufacturing and composites fabrication
- Training sessions and workshops on topics such as design software, machining, and testing techniques
- Feedback and guidance from NURUS' experienced engineers and designers
- Opportunities to showcase our work and promote our team through NURUS' social media and marketing channels
- Potential for ongoing collaboration with NURUS on future projects or research initiatives

Additionally, we were fortunate to receive assistance from several of NURUS' team members, including Özge, Can, and Mehmet, who provided us with technical support and guidance throughout the manufacturing process. Their expertise and dedication were invaluable in helping us overcome any challenges we encountered, and in ensuring that our final product met our high standards of quality and performance.

We are grateful for the support and resources that NURUS provided us, which helped us to achieve success in the competition.

## 7 Our Experience with NURUS

Working with NURUS was an unforgettable experience that challenged us to push the limits of our knowledge and skills. From the moment we stepped into their workspace, we were surrounded by a team of passionate engineers and designers who were eager to help us succeed.

Our journey began with the design phase to create a 3D model of our aircraft. With the help of their team members, we were able to refine our design and optimize it for performance and efficiency.

Once we had our design locked in, we began the manufacturing process. This was where NURUS truly shone, as we were given access to their state-of-the-art equipment and materials. We used their CNC machine to precisely cut our components, their laser cutter to create intricate patterns in our wings, and their 3D printer to produce small parts with extreme accuracy. We also used their high-quality materials, including carbon fiber, epoxy, and composites, to construct our aircraft.

As we worked on our aircraft, we were constantly supported by NURUS' team members, who provided us with invaluable feedback and guidance. We were encouraged to ask questions and seek help whenever we needed it, and we always felt like we were part of the NURUS family.

One of the most memorable moments of our experience was when we were invited to present our progress to NURUS' management team. We gave a comprehensive presentation on our design, manufacturing, and testing processes, and were met with enthusiastic applause and encouragement.

Throughout our time at NURUS, we also had the opportunity to learn about the company's other projects and initiatives, which ranged from cutting-edge furniture design to advanced aviation research. We were inspired by their commitment to innovation and excellence, and felt privileged to be part of their community.

As our project came to a close, we were proud to see our aircraft take shape and perform at its best. We knew that without NURUS' support, we would not have been able to achieve such a high level of success. We are grateful to NURUS for giving us this opportunity, and we look forward to maintaining our relationship with them in the future.

## 8 Results

As a result of our partnership with NURUS, we were able to create an exceptional aircraft that outperformed our competitors. We were also able to fulfill the requirements of the sponsorship agreement by placing NURUS' logos on our aircraft and t-shirt, and by creating a video in their factory.

## 9 Conclusion

Our sponsorship agreement with NURUS was a success, and we are grateful for the support and resources they provided us. We look forward to the possibility of future collaborations with NURUS.

## 10 Media Coverage and Public Relations

Throughout the course of our partnership with Nurus, our team was featured in a number of news outlets and social media channels. We were proud to share the success of our project and the extent of Nurus' sponsorship with the wider public. Some of the highlights include:

- An article on our project and partnership with Nurus was featured in the university's newsletter, which reaches thousands of alumni and supporters.
- Our team was interviewed by a local news outlet, which aired a segment on our project and partnership with Nurus.
- We shared our progress and results on social media, including posts on Twitter and Instagram that featured Nurus' logo and tagline.
- We created a promotional video that showcased our partnership with Nurus and highlighted the role that their support played in our success. This video was shared on social media and at a final presentation event.

Overall, our media coverage and public relations efforts helped to showcase the extent of Nurus' sponsorship and the success that we achieved together. We are grateful to Nurus for their support and for the opportunity to share our project with a wider audience.

## 11 Introduction to Betelgeuse UAV

The Betelgeuse UAV has been designed and developed by a team of skilled university students who have utilized cutting-edge technology and expertise to create a high-performance unmanned aircraft. With a wingspan of 270cm and a maximum takeoff weight of nearly 12KG, it is a powerful and agile aircraft that can maneuver quickly and efficiently.

Equipped with two T-motor 2826 4S motors and the Pixhawk Cube Orange flight controller, the Betelgeuse UAV is a reliable and precise aircraft that can fly at a maximum speed of nearly 200 kmph

and has a maximum flight time of nearly 1 hour. The Jetson Xavier NX companion computer and the Logitech Full HD Webcam allow for accurate detection and tracking of other UAVs in the air.

The Betelgeuse UAV's fully carbon body makes it lightweight and durable, allowing it to fly in most weather conditions. It has a range of up to 10 KM with 900 MHz telemetry and long-range WiFi for communication, making it suitable for a variety of applications.

The primary objective of the Betelgeuse UAV is to track and follow other UAVs for a specific time period of 4 seconds. Its high-performance camera and advanced image processing capabilities enable it to track other UAVs accurately and with high precision. This makes it an ideal choice for applications such as aerial photography, surveillance, and search and rescue operations.

Overall, the Betelgeuse UAV is a remarkable achievement of a university student team, and its advanced technology and precise performance make it an excellent choice for a range of applications.