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EXPERIENȚA PROFESIONALĂ

Universitatea Tehnica din Cluj-Napoca - România, Cluj-Napoca

Asistent Universitar

[02/03/2026 - În curs]

Universitatea Tehnica din Cluj-Napoca - România, Cluj-Napoca

Cadru didactic asociat

[20/10/2023 - În curs]

Universitatea Tehnica din Cluj-Napoca - "**SCIENCE BUILDING THE FUTURE**" - România, Cluj-Napoca

Asistent Cercetare

[12/08/2024 - În curs]

Universitatea Tehnica din Cluj-Napoca - România, Cluj-Napoca

Expert Invatamant - Proiect Erasmus+2023-1-TRO1-KA220-VET

[03/07/2024 - 31/12/2025]

Universitatea Tehnica din Cluj-Napoca - "**Servicii de reconstituire virtuala a Hotelului Dacia**" -

România, Cluj-Napoca

Asistent Cercetare

[22/07/2024 - 30/09/2024]

Universitatea Tehnica din Cluj-Napoca - România, Cluj-Napoca

Inginer

[27/10/2022 - 31/12/2022]

Dezvoltarea unei aplicatii de realitate augmentata in cadrul proiectului „Exploring Dacia”

Ministerul Culturii - proiectul „E-cultura: Biblioteca digitală a României” - România, Cluj-Napoca

Documentarist - scanare

[19/09/2022 - 19/05/2023]

- Scanarea resurselor culturale de tip obiecte tridimensionale
- Post-procesarea fișierelor rezultate ale scanării 3D

EDUCAȚIE ȘI FORMARE

Doctor Inginer

UTCN, Facultatea de Inginerie Industrială, Robotică și Managementul Producției [15/07/2023 - În curs]

Localitatea: Cluj-Napoca | **Țara:** România

Site de internet: <https://iirmp.utcluj.ro/> | **Domeniul (domeniile) de studiu:** Inginerie Industrială : | **Lucrare de diplomă:** Cercetări și contribuții privind implementarea tehnologiilor de realitate virtuală, augmentată și mixtă în domeniul industrial

Inginer Masterat

UTCN, Facultatea de Inginerie Industrială, Robotică și Managementul Producției [26/09/2021 - 15/07/2023]

Adresa Bulevardul Muncii nr. 103-105400641, Cluj-Napoca (România) | **Site de internet:** <https://iirmp.utcluj.ro/> | **Domeniul (domeniile) de studiu:** Proiectare asistată de calculator a sistemelor de fabricație: | **Diplomă finală:** 10 | **Lucrare de diplomă:** Sistem de navigație interioară folosind tehnologia de realitate augmentată în cadrul Universității Tehnice din Cluj-Napoca

Inginer

Universitatea Tehnica din Cluj-Napoca, Facultatea de Construcții de Masini [30/09/2017 - 30/06/2021]

Adresa Bulevardul Muncii nr. 103-105400641, Cluj-Napoca (România) | **Domeniul (domeniile) de studiu:** Mecatronica și Robotica, programul de studii Robotica (în Lb. Engleza): | **Diplomă finală:** Media generală de promovare: 8.91 / Nota lucrare licență: 10 | **Număr de credite:** 240 | **Lucrare de diplomă:** SIMULATION OF AN ASSEMBLY PROCESS IN VIRTUAL REALITY USING UNITY

Competențe:

- Utilizare programe : Unity, Solidworks, Catia, Autocad;

Diploma de Bacalaureat

Colegiul National "Liviu Rebreanu" [14/09/2013 - 10/07/2017]

Adresa B-dul Republicii nr.8420057, Bistrita (România)

COMPETENȚE LINGVISTICE

Limbă(i) maternă(e): Romana

Engleza

COMPREHENSIVITATE ORALĂ: B2 **CITIT:** B2 **SCRIS:** B2

PRODUCEREA DE MESAJE ORALE: B2

CONVERSAȚIE: C1

COMPETENȚE

Unity3D | Catia, SolidWorks, Autocad | Microsoft Office | Cunoștințe în utilizarea programului software liber de grafică Blender. | Scanare 3D - Go!SCAN 50 | Scanare 3D - Artec Spider | Unreal Engine 5 | Scanare 3D

PUBLICAȚII

[2025]

HYBRID & ELECTRIC VEHICLES TECHNOLOGY Principles, Electronics, Diagnostic

Autori: V. Bacu, R. Comes, T. Stefanut, A. Sabou, C. Nandra, R. A. Gorgan, D. Andresan, C. Neamtu, D. Gorgan, G.

LUCRĂRI ȘTIINȚIFICE

Enhancing Mold Injection Training with VR and AR: A Case Study on Immersive Technologies in Industrial Maintenance

Year: 2026

Lecture Notes in Production Engineering. Springer, Cham. https://doi.org/10.1007/978-3-032-19656-9_58

Description: The application of Virtual Reality (VR) and Augmented Reality (AR) in maintenance activities has significantly transformed traditional approaches by enhancing training, diagnostics, and predictive maintenance. VR enables immersive and risk-free training environments, allowing technicians to practice complex procedures without real-world hazards. Additionally, VR facilitates advanced troubleshooting by providing interactive simulations and real-time assisted guidance. Integrated with IoT sensors, VR contributes to predictive maintenance by visualizing equipment data and identifying potential failures before they occur. Furthermore, remote assistance through VR reduces operational costs and response times by enabling experts to guide on-site technicians virtually. This paper presents a case study on training operators who perform maintenance operations for plastic injection molds. Plastic injection molds consist of hundreds of components, and their maintenance procedures are highly complex. AR offers an assistive learning environment that enhances the training process for operators responsible for mold maintenance by providing real-time, contextual guidance during actual maintenance tasks. This study employs an applied research methodology to evaluate the effectiveness of AR as a support tool for workers performing maintenance operations on plastic injection molds. To support hands-on learning and improve spatial understanding, a 3D-printed assembly of the mold part has been created and integrated to work with the AR application. This combination allows users to interact with a physical replica while receiving step-by-step digital instructions overlaid through AR. The study aims to demonstrate how VR and AR can improve workers' technical skills, reduce errors, and increase the efficiency of maintenance operations for complex mold systems.

Authors: Popescu, D., Andreşan, D., Neamţu, C., Comes, R., Buna, ZL., Bodi, Ş.

Journal Name: Sustainable Systems in an Internetnetworked Digital World. ICPR 2025

Publisher: Springer, Cham

Link: https://link.springer.com/chapter/10.1007/978-3-032-19656-9_58

Development of AR Supported Immersive Book for Hybrid and Electric Vehicles Education

Year: 2025

2025 International Conference on Intelligent Computing and Virtual & Augmented Reality Simulations (ICVARS), Birmingham, United Kingdom, 2025, pp. 94-98, doi: 10.1109/ICVARS66454.2025.11198630.

Description: In recent years, the global trend of reducing exhaust emissions and the increasing demand for clean energy sources have initiated the development of Hybrid Electric Vehicles (HEVs) and Electric Vehicles (EVs) by many vehicle manufacturers. A prevalent issue in the maintenance of HEVs, whose adoption is steadily increasing, is the lack of adequate technical knowledge and competency among service personnel to safely perform maintenance and service operations, particularly those involving high-voltage systems and associated hazards. Therefore, the need for trained technical personnel who can provide maintenance services to these new vehicles is increasing all over the world. This study details the development process of an augmented reality (AR)-enhanced book aimed at improving teaching and learning effectiveness in the field of HEVs and EVs.

Authors: R. Arslan, A. Kuş, R. Comes, D. Gorgan and D. -A. Andreşan,

Journal Name: 2025 International Conference on Intelligent Computing and Virtual & Augmented Reality Simulations

Volume, Issue and Pages: pp. 94-98

Link: <https://ieeexplore.ieee.org/abstract/document/11198630>

Indoor Navigation System Using Augmented Reality Technology at the Technical University of Cluj-Napoca

Year: 2024

Description: This paper presents an augmented reality application designed to enhance indoor navigation at the Technical University of Cluj-Napoca. The case study focuses on an indoor navigation system to assist students and visitors in navigating from one room to another within the 4th floor of the "M" building. Given the numerous classrooms in the faculty building on Muncii Boulevard, navigating without prior knowledge of the layout was time-consuming. A 3D model of the 4th floor was created using Autodesk Revit and exported into Unity to integrate seamlessly into an augmented reality (AR) application. The AR application was developed using Unity along with the "AT+ Sync | Synchronize with Unity," "AT+ Sync v2 | Synchronize from Revit," and "AT+ Explore | Interactive Archviz" plugins. This application allows students and visitors to navigate more efficiently within the Technical University of Cluj-Napoca and can be easily adapted for use in other buildings. By leveraging the versatility of these tools, the application not only improves way finding but also has the potential to enhance overall user experience, reduce stress associated with finding rooms, and increase the accessibility of university facilities for newcomers and guests.

Authors: Dragoş Andrei Andreşan, Călin Gheorghe Dan Neamţu, Radu Comes

Journal Name: 2024 International Conference on User-System Interaction

Geometrical Tolerances Android Application Developed for Student for a Better Understanding of Orientation Tolerances According to the Latest ISO Standards

Year: 2023

Description: In the year 2021, a virtual reality training application has been developed, specifically for the Oculus Quest 2 headset, in order to allow the users to view and analyse 3D models for a wide variety of geometrical tolerances, tolerance zones and even the conformity condition and the datum features. This application allows the students to better understand the geometrical tolerances in accordance with the latest ISO GPS standards by using different 3D interactive models in order to highlight different types of geometrical tolerances and tolerance zones. In order to try to make the virtual reality training application more mobile and accessible for students, a mobile application, designed for the android operating system smartphones, has been developed. This application can facilitate better learning outcomes within the teaching-learning process by enabling the students to visualize a wide variety of 3D models representing different types of geometrical tolerances. Due to the dramatic evolution of technology in the past 20 years and the need to constantly keep up with it, the learning and teaching process suffered a massive change. The Covid pandemic has closed Universities all over the world and so, for the teaching process to continue, a sudden shift from traditional teaching to a more modern one involving the digital world was needed. Thanks for the fact that, nowadays, students are more inclined to use different types of mobile devices, the shift to the new learning paradigm has not left a great "scar" on student and teachers.

Authors: Pop, G.M., Comes, R., Neamtu, C., Crisan, L.A., Andresan, D.

Journal Name: Durakbasa, N.M., Gençylmaz, M.G. (eds) Towards Industry 5.0. ISPR 2022.

Publisher: Springer, Cham

Link: https://link.springer.com/chapter/10.1007/978-3-031-24457-5_1

Research Regarding the Development of an Android Application Presenting Measurement, Drawing Indications and Explanations for Roughness Parameters

Year: 2023

Lecture Notes in Mechanical Engineering. Springer, Cham. https://doi.org/10.1007/978-3-031-53991-6_12

Description: This paper presents an android application developed for engineering students aiming to help them develop their skills to correctly interpret roughness parameters and their measurements according to the ISO standards. Due to the evolution of technology in the past 20 years and the need to constantly keep up with it, the learning and teaching process suffered a massive change. Students nowadays are high-tech learners, and they use their mobile devices in the learning process. Surface roughness is a critical factor that affects the performance and functionality of the engineering components. It is essential for the engineering students to

understand how to measure and analyze the roughness parameters in order to ensure the quality and efficiency of the different machined products. The developed application provides guidelines for measuring different roughness parameters, according to ISO 4287, ISO 4288 and offers details regarding the indication of roughness parameters according to ISO 1302. The application also presents ranges of values for Ra and Rz obtained through different machining procedures. The aim of the developed application is to improve the quality of the teaching process of Tolerances and Dimensional Control and 3D Modelling courses for engineering students, covering the following lines of studies: design, robotics, industrial and mechanical engineering.

Authors: Pop, G.M., Crisan, L.A., Tripa, M.S., Andresan, D.

Journal Name: Durakbasa, N.M., Gençyılmaz, M.G. (eds) Industrial Engineering in the Industry 4.0 Era. ISPR 2023.

Publisher: Springer, Cham

Link: https://link.springer.com/chapter/10.1007/978-3-031-53991-6_12

VIRTUAL REALITY TRAINING SYSTEM FOR INJECTION MOULDING OPERATORS

Year: 2022

Description: This paper presents a virtual reality training system intended to be used by operators in injection moulding manufacturing. This case study has been focused on the assembly process of a head brush injection mould. The Assembly process of injection moulding represents a complex task due to the complexity and number of components involved in the final assembly. The injection mould has been designed in SolidWorks and exported in Blender to facilitate the VR integration of the 3D models. The virtual reality application has been developed using Unity and SteamVR plugin. This application allows the operator to easily understand the steps required to assemble an injection mould and it can be extended to be used on a larger variety of different types of injection moulds. The case study proposed virtual reality system has been tested on a desktop PC paired to Valve Index head mounted system and includes the following four different training areas: injection mould, parts assembly, 2D drawings analysing and video tutorials. Each training areas has been created to provide specific training related to the complex process of injection moulding.

Authors: Radu COMES, Dragoş Andrei ANDREŞAN

Journal Name: ACTA TECHNICA NAPOCENSIS - Series: APPLIED MATHEMATICS, MECHANICS, and ENGINEERING, mar. 2022.

Volume, Issue and Pages: Vol. 65, Nr. 1S

Link: <https://atna-mam.utcluj.ro/index.php/Acta/article/view/1737>