Postgraduate Diploma

Emerging Technologies in Front-End Using Artificial Intelligence, Augmented Reality and Virtual Reality

tech global university

tech global university

Postgraduate Diploma

Emerging Technologies in Front-EndUsing Artificial Intelligence, Augmented Reality and Virtual Reality

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-emerging-technologies-front-end-using-artificial-intelligence, augmented-reality-virtual-reality

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Introduction

A survey of DevSecOps professionals shows that 58% apply Artificial Intelligence in their code reviews. This highlights that frontend developers are beginning to be aware of the power of Emerging Technologies to perform tasks such as pattern recognition, natural language processing or decision making. Given this reality, it is important for IT professionals to keep abreast of advances in this field to ensure that their services stand out for their high quality. For this reason, TECH is launching a university program focused on the analysis of breakthrough technologies in Front-End Web Development. Also, it is taught in its totality in a 100% online comfortable format.

Thanks to this 100% online Postgraduate Diploma, you will use Artificial Intelligence algorithms in front-end applications for functionalities such as data analysis or personalized recommendations"

The arrival of Industry 4.0. has had a significant impact on the Front-end field, thanks to the implementation of sophisticated technological tools. An example of this is Artificial Intelligence and Machine Learning. These tools serve to personalize the user experience, displaying relevant content based on aspects such as consumer behavior, preferences and demographic characteristics. In addition, algorithms are useful for analyzing user interaction with the interface and using this information to improve the design or layout of elements. For example, they can dynamically adjust the size and position of targets in order to optimize usability.

In this context, TECH creates a revolutionary Postgraduate Diploma in Emerging Technologies in Front-End using Artificial Intelligence, Augmented Reality and Virtual Reality. The curriculum will provide the most advanced Media Queries techniques for developers to create highly responsive web applications and improve performance on a variety of devices. At the same time, the academic content will delve into Frameworks tools to develop cross-platform mobile programs. In line with this, the syllabus will delve into the creation of interactive Virtual Reality environments offering cutting-edge techniques for the creation of 3D content. The program will also offer a breakthrough module on the future of Artificial Intelligence and its integration to optimize user experiences.

In addition, this academic itinerary is characterized by its 100% online methodology. This modality will provide computer scientists with the necessary flexibility to adapt to their professional schedules. Likewise, the Relearning methodology, based on the repetition of key concepts, will be implemented to fix knowledge and facilitate effective learning. In this way, the combination of accessibility and innovative pedagogical approach will ensure that professionals acquire practical skills, preparing them to overcome specific challenges during the use of Emerging Front-End Technologies.

This **Postgraduate Diploma in Emerging Technologies in Front-End Using Artificial Intelligence, Augmented Reality and Virtual Realitycontains** the most complete and up-to-date program on the market. The most important features include:

- The development of practical cases presented by experts in Front-End Web Development
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Study from the comfort of your home and update your knowledge 100% online with TECH, the best digital university in the world according to Forbes"

You will delve into Debugging Strategies for mobile applications and solve technical problems efficiently"

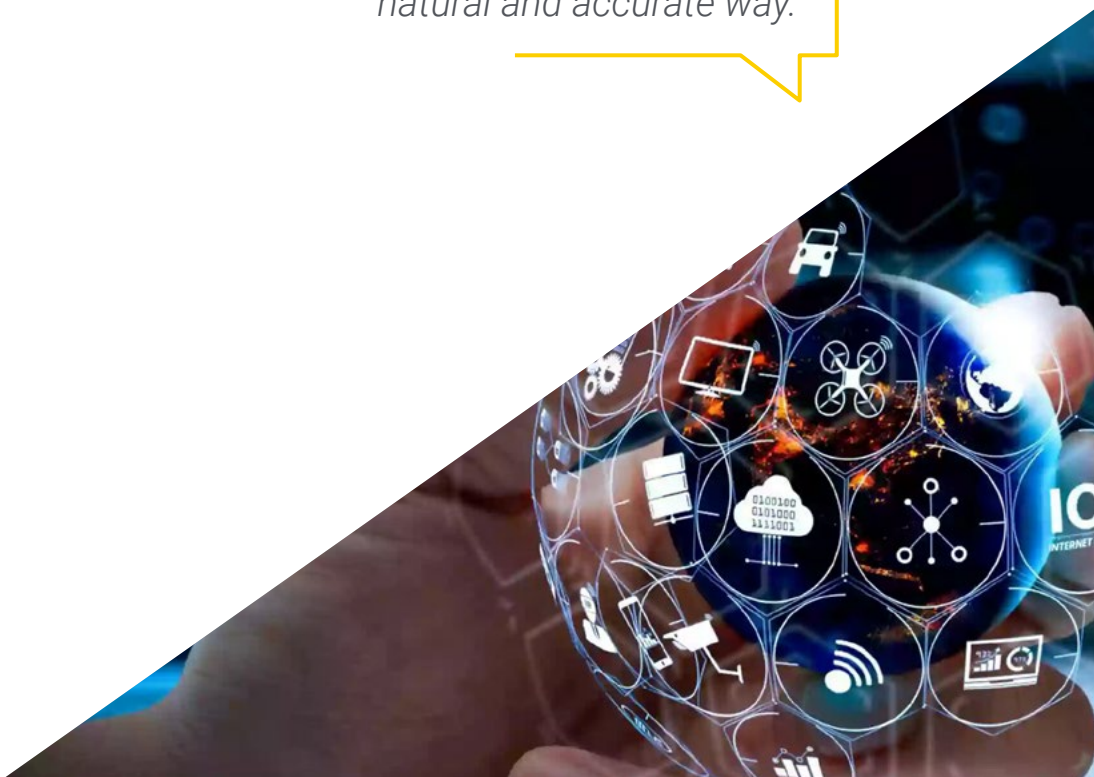
Looking to keep up to date with the latest advances in Emerging Front-End Technologies? Achieve it with this program in only 450 hours.

Thanks to TECH's Relearning, you will assimilate the essential concepts in a fast, natural and accurate way.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

Through this university program, computer scientists will have a comprehensive approach to the latest Emerging Technologies in the Front-End field. Students will also gain skills to develop applications that integrate Artificial Intelligence, Augmented Reality and Virtual Reality. In this way, graduates will optimize the user experience to increase the chances of customer retention. At the same time, developers will design functional user interfaces that adapt to different devices and resolutions to improve their accessibility. They will also have an aptitude for solving technical problems and find innovative solutions to address challenges in project design.

You will gain competencies to effectively handle Front-End Technologies such as JavaScript, HTML and frameworks"

General Objectives

- Acquire a deep understanding of advanced responsive design techniques, learning how to build interfaces that adapt fluidly to different screen sizes and orientations
- Develop skills to optimize applications for mobile devices, improving performance, accessibility and user experience, with a special focus on Progressive Web Apps
- Explore and adapt to emerging technologies in mobile development, including 5G, Augmented and Virtual Reality, and the use of specific hardware, preparing for the future of mobile development
- Provide a solid understanding of WebXR, including its APIs, and the fundamental differences between AR and VR, to develop applications that leverage these technologies on the frontend
- Use specific frameworks and libraries to create web AR experiences and interactive VR environments, focusing on design principles, usability, and performance optimization
- Encourage the design of user interfaces and immersive experiences that are intuitive and accessible, using WebXR to enhance navigation, interaction, and real-time data integration
- Provide a solid foundation in Artificial Intelligence (AI) and Machine Learning (ML) concepts, preparing developers to integrate these technologies into the creation of user interfaces and user experiences
- Familiarize students with tools such as TensorFlow.js, enabling them to build and use them in the creation of user interfaces and user experiences

Specific Objectives

Module 1. Mobile Development and Advanced Responsive Design in Front-End

- Implement advanced media queries techniques
- Use frameworks and tools for responsive design
- Develop Progressive Web Apps (PWA)
- Ensure accessibility in mobile applications
- Incorporate adaptive navigation and design patterns
- Explore development with native application frameworks

Module 2. Augmented and Virtual Reality in Front-End Web Development

- Master the basics of WebXR and its API
- Develop AR experiences on the web
- Create interactive VR environments
- Design UI/UX for WebXR applications
- Optimize performance for WebXR experiences
- Ensure Accessibility in WebXR Applications

Module 3. Artificial Intelligence and Machine Learning in Front-End Web Development

- Develop specialized knowledge on Artificial Intelligence (AI) and Machine Learning (ML)
- Integrate ML models in front-end applications
- Personalize content and recommendations with AI
- Implement image recognition and NLP in front-end applications
- Optimize application performance with AI
- Secure and validate front-end AI integrations

03

Course Management

In line with its philosophy of offering first-class academic experiences, TECH carries out a thorough selection process to form its teaching staff. For this Postgraduate Diploma, TECH brings together true references in the field of Front-End Web Development. These specialists have a long career, where they have provided highly innovative solutions to prestigious technological entities. In addition, they keep abreast of the latest trends in their field of specialization to optimize their practice and provide excellent quality services. In this way, students have the guarantees they need to specialize in a sector that is highly demanded by digital companies.

A well versed teaching team will accompany you during your learning process to provide personalized advice and resolve any doubts that may arise"

Management

Mr. Utrilla Utrilla, Rubén

- Technology Project Manager at Serquo
- Full-Stack Developer at ESSP
- Junior Full-stack Developer at Sinis Technology S.L.
- Junior Full-stack Developer at Escuela Politécnica Cantoblanco Campus
- Master in AI and Innovation by Founderz
- Degree in Computer Engineering from Universidad Autónoma de Madrid
- Google Cloud Developer course in Google Academic Program

Professors

Ms. Jiménez Monar, Angélica Liceth

- Software Developer at Serquo
- Technical Support Specialist at Tecnocom
- Degree in Computer Engineering from Universidad Autónoma de Madrid
- Superior Degree in Networked Computer Systems Administration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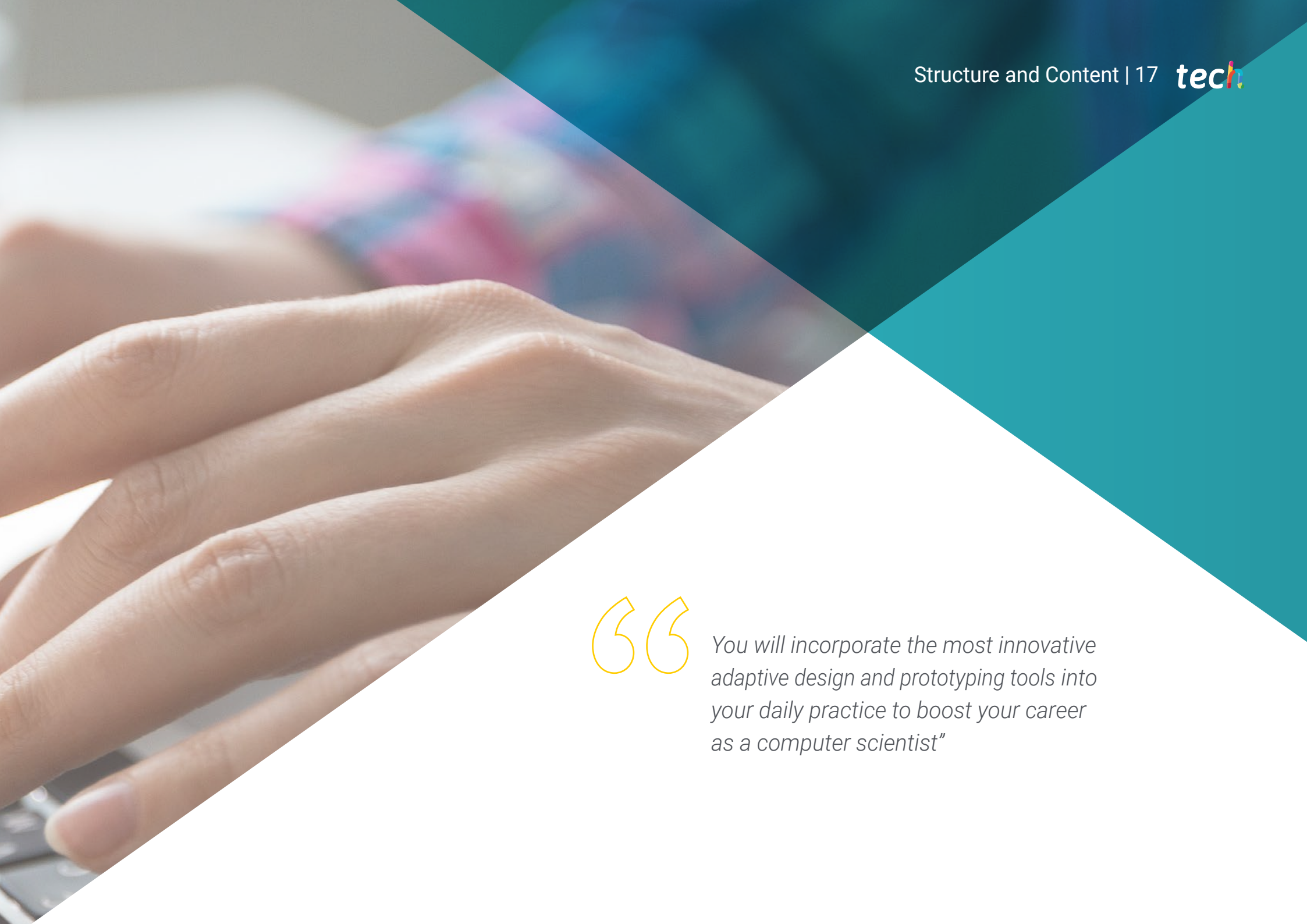
Structure and Content

With this university program, computer scientists will master emerging technologies such as Artificial Intelligence, Augmented Reality and Virtual Reality. The pathway will examine the development of responsive interfaces and mobile applications using the latest cutting-edge technologies. Likewise, the agenda will delve into the fundamentals of WebXR for developers to create immersive content that can be experienced through devices compatible with Virtual Reality and Augmented Reality. In addition, the materials will delve into the fusion between Artificial Intelligence and Machine Learning with front-end development, which will open a new horizon of possibilities for the creation of personalized, interactive and accessible user experiences.



You will incorporate the most innovative adaptive design and prototyping tools into your daily practice to boost your career as a computer scientist"

Module 1. Mobile Development and Advanced Responsive Design in Front-End

1.1. Responsive Design in Front-End Web Development
- 1.1.1. Advanced Media Query Techniques
- 1.1.2. Relative Units and Fluid Design
- 1.1.3. Responsive Image Strategies and Vectors

1.2. Frameworks and Tools for Responsive Design in Front-End Web Development
- 1.2.1. Bootstrap, Foundation and Tailwind CSS for Responsive Design
- 1.2.2. Adaptive Design and Prototyping Tools
- 1.2.3. Automation and Testing of Responsive Design

1.3. Performance on Mobile Devices
- 1.3.1. Optimization of Load and Performance on Mobile Devices
- 1.3.2. Efficient Content Delivery Strategies
- 1.3.3. Performance Analysis and Monitoring on Real Devices

1.4. PWA and Mobile Experience
- 1.4.1. Development of Progressive Web Apps for an Optimal Mobile Experience
- 1.4.2. Integration with Native Device Functions
- 1.4.3. Engagement and Re-Engagement Strategies

1.5. Mobile Accessibility
- 1.5.1. Mobile Accessibility Best Practices and Standards
- 1.5.2. Testing and Validation of Accessibility on Mobile Devices
- 1.5.3. Inclusive Design for Mobile Applications

1.6. Mobile Navigation and Design Patterns
- 1.6.1. Adaptive Navigation Patterns for Mobile
- 1.6.2. Design of Intuitive User Interfaces
- 1.6.3. Usability and User Experiences in Mobile Contexts

1.7. Mobile Development Frameworks
- 1.7.1. React Native and Vue Native for Native Applications with JavaScript
- 1.7.2. Comparison with Native Solutions and Webviews
- 1.7.3. Applications and Best Practices

1.8. Emerging Mobile Technologies
- 1.8.1. 5G and Its Impact on Mobile Web Development
- 1.8.2. Augmented Reality (AR) and Virtual Reality (VR) in Mobile Contexts
- 1.8.3. Integration of Sensors and Specific Hardware

1.9. Mobile Testing and Debugging
- 1.9.1. Tools and Environments for Mobile Testing
- 1.9.2. Simulators, Emulators and Testing on Real Devices
- 1.9.3. Debugging Strategies for Mobile Applications

1.10. Future of Mobile Development
- 1.10.1. Emerging Trends and the Future of Mobile Development
- 1.10.2. Cross-Platform Development and the Future of Native Technologies
- 1.10.3. Adapting and Responding to Changes in User Behavior

Module 2. Augmented and Virtual Reality in Front-End Web Development

2.1. WebXR from the Front-End Web Development Approach
- 2.1.1. WebXR and Its API
- 2.1.2. Augmented Reality (AR) and Virtual Reality (VR). Differences
- 2.1.3. Compatibility and Hardware Requirements

2.2. Development of AR Experiences on the Front-End Web
- 2.2.1. Use of Frameworks and Libraries for AR (A-Frame, AR.js)
- 2.2.2. Integration of AR into Existing Web Applications
- 2.2.3. Application and Design Best Practices

2.3. Creation of Interactive VR Environments in Front-End Web Development
- 2.3.1. Design and Development of VR Environments
- 2.3.2. Tools and Techniques for the Creation of 3D Content
- 2.3.3. Immersive VR Applications in the Browser

2.4. User Interface and User Experience in WebXR from a Front-End Approach
- 2.4.1. UI/UX Design for AR and VR Applications
- 2.4.2. Usability and Accessibility
- 2.4.3. Strategies for Navigation and Interaction in Immersive Environments

2.5. Performance Optimization for WebXR from the Front-End Approach
- 2.5.1. Specific Optimization Techniques for AR/VR Experiences
- 2.5.2. Efficient Handling of Graphics and Computational Resources
- 2.5.3. Testing and Performance Monitoring on Different Devices

2.6. Integration of Sensors and Real-Time Data Using Front-End Technologies
- 2.6.1. Use of Device Sensors for Immersive Experiences
- 2.6.2. Incorporation of Real-Time Data in AR/VR Applications
- 2.6.3. Practical Applications in Specific Industries

2.7. Mixed Reality and Hybrid Applications from a Front-End Approach
- 2.7.1. Mixed Reality (MR) and Its Application in Front-End Web Development
- 2.7.2. Development of Experiences that Combine Physical and Virtual Elements
- 2.7.3. Practical Applications for Emerging Uses in Education, Training and Commerce

2.8. Accessibility in WebXR Applications from a Front-End Approach
- 2.8.1. Challenges and Solutions for AR/VR Accessibility
- 2.8.2. Strategies for Making AR/VR Content Accessible to All Users
- 2.8.3. Standards and Guidelines for Inclusion in Immersive Experiences

2.9. WebXR and the Future of e-Commerce from a Front-End Approach
- 2.9.1. AR/VR Applications in e-Commerce
- 2.9.2. Improvements in the Shopping Experience and Product Visualization
- 2.9.3. Future Trends and Consumer Expectations

2.10. Emerging Trends and Future of WebXR from a Front-End Approach
- 2.10.1. Technological Advances and Their Impact on AR/VR Development
- 2.10.2. WebXR on Mobile and Wearable Devices
- 2.10.3. Future Visions for AR/VR Integration on the Web

Module 3. Artificial Intelligence and Machine Learning in Front-End Web Development

3.1. Artificial Intelligence (AI) and Machine Learning (ML) from a Front-End Approach
- 3.1.1. Artificial Intelligence (AI) and Machine Learning (ML) for Front-End Web Developers
- 3.1.2. JavaScript Tools and Libraries for AI/ML
- 3.1.3. Basic Integration of ML Models in Front-End Applications

3.2. Frameworks and JavaScript Libraries for ML from a Front-End Approach
- 3.2.1. TensorFlow.js and Its Ecosystem
- 3.2.2. Creating and Training Models Directly in the Browser
- 3.2.3. Examples and Practical Applications

3.3. Personalization and User Experience Enhanced by AI from a Front-End Approach
- 3.3.1. Use of AI for Content Personalization and Recommendations
- 3.3.2. Improving the UX with Chatbots and Virtual Assistants
- 3.3.3. User Behavior Analysis and Interface Optimization

3.4. Image Recognition and Natural Language Processing (NLP) from a Front-End Approach
- 3.4.1. Implementation of Image Recognition on the Front-End
- 3.4.2. Integration of NLP Capabilities to Improve User Interaction
- 3.4.3. Tools and APIs Available for Developers

3.5. Accessibility and Artificial Intelligence (AI) from a Front-End Approach
- 3.5.1. AI Applications to Improve Web Accessibility
- 3.5.2. Automatic Generation of Image Descriptions
- 3.5.3. Adaptive Interfaces Based on User Needs

3.6. Performance Optimization with Artificial Intelligence (AI) from a Front-End Approach
- 3.6.1. Use of Predictive Modeling for Anticipated Resource Loading
- 3.6.2. Predictive Analytics for Application Performance Improvement
- 3.6.3. Intelligent Caching Strategies

3.7. Security and Ethics in the Integration of Artificial Intelligence (AI) from a Front-End Approach
- 3.7.1. Ethical Considerations in the Use of AI on the Front End
- 3.7.2. Bias Prevention and Privacy Assurance
- 3.7.3. AI-Based Security Enhancements

3.8. Testing and Debugging of Artificial Intelligence (AI) Functionalities from a Front-End Approach
- 3.8.1. Tools and Techniques for Testing AI Integrations
- 3.8.2. Debugging of ML Models in Web Applications
- 3.8.3. Validation and Quality Assurance of AI Predictions

3.9. UI/UX of the Future with Artificial Intelligence (AI) from a Front-End Approach
- 3.9.1. Adaptive and Predictive Interface Design
- 3.9.2. Examples of Innovative AI- Enhanced UI
- 3.9.3. Trends in Interaction Design Based on AI Capabilities

3.10. Emerging Trends and Future of Artificial Intelligence (AI) from a Front-End Approach
- 3.10.1. Advances in Artificial Intelligence (AI) Technologies and their Potential in Web Development
- 3.10.2. Generative Artificial Intelligence (AI) and Its Impact on Web Content
- 3.10.3. Future Visions for the Integration of Artificial Intelligence (AI) in User Experiences

This is the most complete and effective Postgraduate Diploma in the academic market. Enroll now!"

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

> *Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

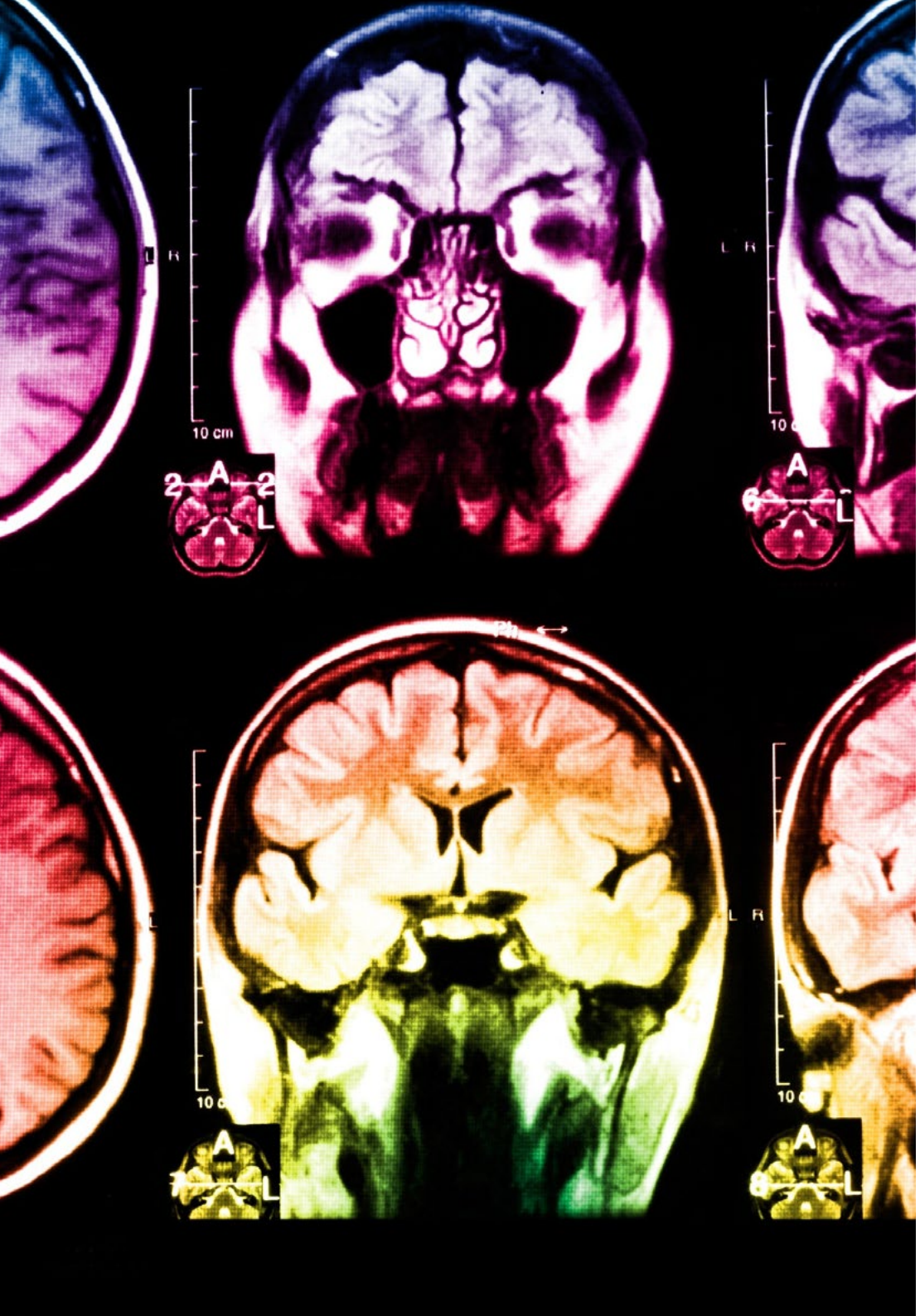
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

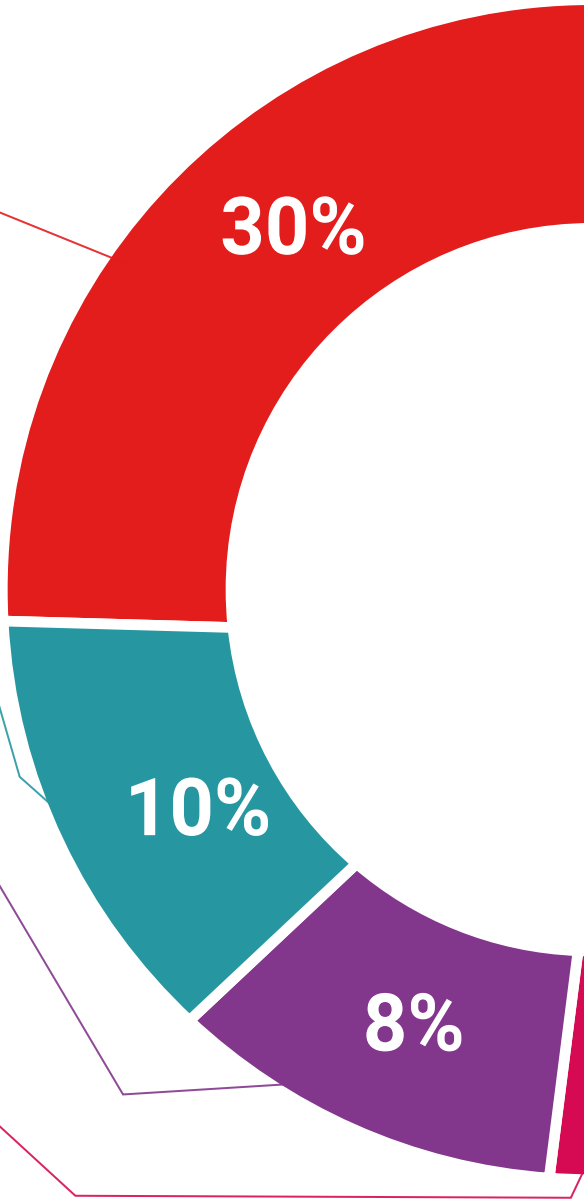
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

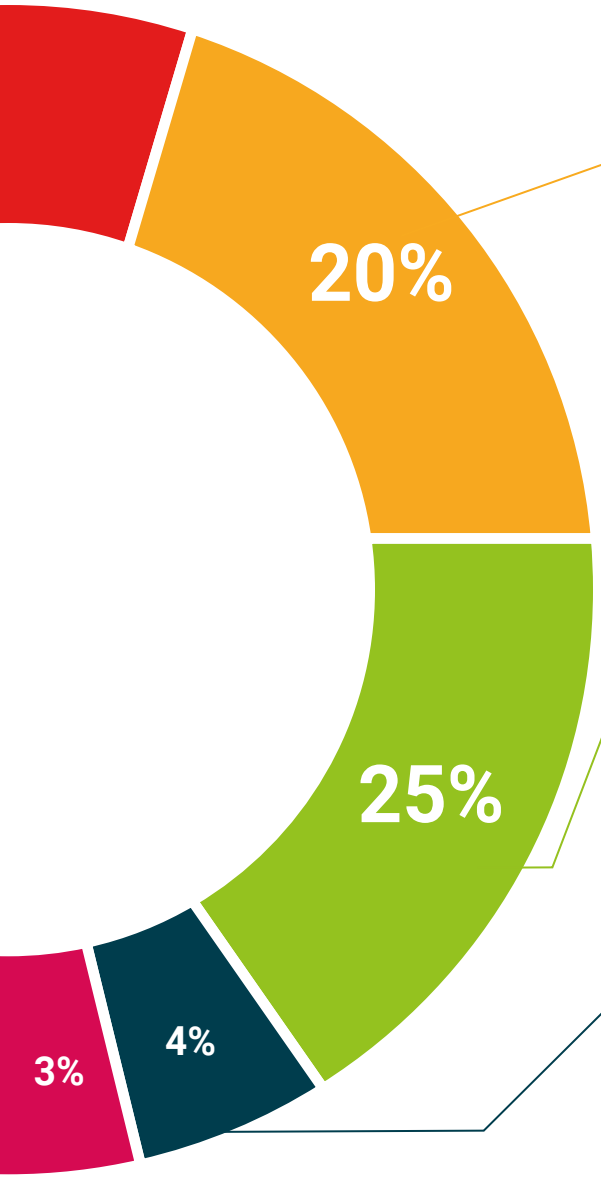
Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

06

Certificate

The Postgraduate Diploma in Emerging Technologies in Front-End-End Using Artificial Intelligence, Augmented Reality and Virtual Reality guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This program will allow you to obtain an **Postgraduate Diploma in Emerging Technologies in Front-End-End Using Artificial Intelligence, Augmented Reality and Virtual Reality** endorsed by **TECH Global University**, the world's largest online university.

Tech Global University is an official European University publicly recognized by the Government of Andorra ***(official bulletin)***. Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **Tech Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

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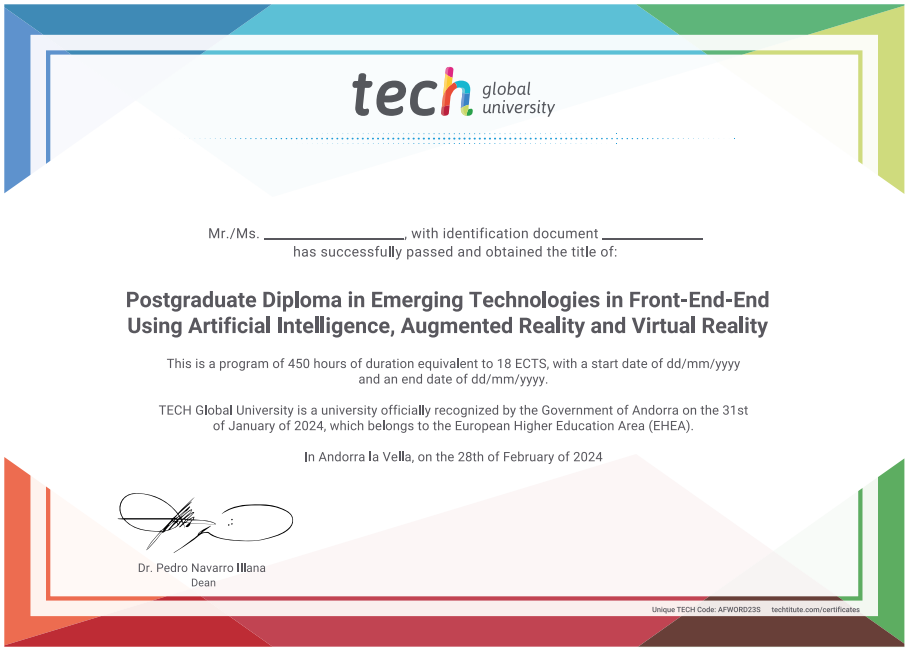
Duration: **6 months**

Accreditation: **18 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Diploma in Emerging Technologies in Front-End-End Using Artificial Intelligence, Augmented Reality and Virtual Reality

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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