# Internship Program
## Computer Vision

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# 01
# Introduction

Continuous advances in Deep Learning and the development of increasingly complete and optimized algorithms have driven the evolution of Computer Vision, exponentially influencing the creation of more sophisticated and effective learning methods, similar to those of the human brain. As a result, the catalog of applications of this technology has grown, from defect detection to assembly verification or screen reading, which has led to an increase in the demand for professionals who are proficient in the use of its tools and protocols. This is why TECH has considered it necessary to develop this program, eminently practical and intensive, which consists of a stay in a reference company in the technological field, through which the professional can learn in detail the ins and outs of the sector in a participatory manner and in a real working environment.

*Access in a practical and participative way the most advanced techniques in Computer Vision thanks to the intensive stay in a reference technological company offered by TECH"*

Currently, one of the most advanced technological fields is Artificial Intelligence, which is used in sectors as diverse as information technology, art and sports. Within this broad discipline, branches such as Artificial Vision, used as a visual processing method for robots and other useful electronic devices, stand out. Because of this, Machine Vision is currently a key area in robotics and healthcare, where it plays an essential role in the analysis of images to provide more accurate diagnoses and monitoring of patients.

For all these reasons, the professional oriented to this area needs to know and acquire the latest techniques and procedures, for which TECH has designed this intensive program. It is an experience distributed over 3 weeks in which the student will become part of a team of workers versed in the management of Machine Learning projects, and in which they will be able to actively participate in all the activities that take place in the organization on a daily basis.

In addition, you will have at your disposal a tutor, who will guide you during the practical period, ensuring compliance with the demanding requirements that TECH imposes in its training and ensuring that you can get the most out of this experience that will mark a before and after in your professional career.

# 02
# Why Study an Internship Program?

In order to learn about the latest developments in Computer Vision and to be able to integrate them into daily work, a practical approach to learning is required. Because of this, compared to other options that incorporate only a theoretical vision, TECH has designed this program, which will provide the professional with the opportunity to carry out a practical and intensive stay in a company of recognized prestige in the technology sector. In this way, you will later be able to develop in your own work according to the latest postulates of this branch of Artificial Intelligence.

"

*You will not find another opportunity like this one to develop yourself, in a practical and participative way, in an elite professional environment in the Computer Vision sector"*

### 1. Updating from the latest technology available

The integration of computer vision in areas such as healthcare has led to rapid progress in this discipline, positioning it as one of the most important in the technology sector today. Because of this, it is essential for the professional oriented to this field to be able to operate in environments with state-of-the-art equipment. For this reason, TECH has ensured that this Internship Program allows you to participate in technologically advanced companies, thus guaranteeing a complete and updated learning experience.

### 2. Deepen your knowledge from the experience of top experts

The professional will be able to actively participate in the work and activities of the company in which they perform the internship. And you will always be accompanied by great experts in Computer Vision, who will transfer all their experience and knowledge in a direct and immediate way, so that you can later apply them in your own work environment. In addition, you will have a specifically designated tutor who will guide you through the entire hands-on learning process.

### 3. Entering First-Class Clinical Environments

TECH carefully selects all available centers for Internship Programs. Thanks to this, the professional will have guaranteed access to a prestigious technological environment in the Computer Vision sector. In this way, you will be able to see the day-to-day work of a demanding, rigorous and exhaustive sector, always applying the latest theses and scientific postulates in its work methodology.

### 4. Putting the acquired knowledge into daily practice from the very first moment

The approach of this program will allow the student to address all the challenges of Computer Vision in an intensive way, which will then facilitate the application of their new knowledge in their own projects. All this, in only 3 weeks and with a 100% practical learning model.

### 5. Expanding the Boundaries of Knowledge

TECH offers the possibility of doing this Internship Program, not only in national, but also in international centers. In this way, students will be able to expand their frontiers and catch up with the best professionals, who work in first class companies and in different continents. A unique opportunity that only TECH, the largest online university in the world, could offer.

*You will have full practical immersion at the center of your choice"*

# 03
# Objectives

This Internship Program has been developed so that the graduate can obtain a global vision of the devices and hardware used in the world of Computer Vision through an exhaustive analysis of the different fields in which these techniques are applied. In addition, by using the most cutting-edge methodology in the university sector, you will be able to hone your skills in the evaluation of fundamental and advanced strategies for image processing and presentation of open 3D libraries. Finally, the computer scientist will gain specialized knowledge about the current state of Computer Vision and what the future holds for it in the coming years.

## General Objectives

- Learn about the latest advances in Computer Vision in a professional context
- Master the technological procedures of Computer Vision, taking into account the latest developments in Artificial Intelligence, Machine Learning and Deep Learning
- Integrate the latest Computer Vision techniques in daily work, taking into account the current applications of this technology

## Specific Objectives

- Establish how the human vision system works and how an image is digitized
- Analyze the evolution of computer vision
- Determine how robots have eyes thanks to artificial vision and how it is applied in space travel
- Establishing what augmented reality is and its fields of use
- Examine commercial and open-source digital image processing libraries
- Determine what a digital image is and evaluate the fundamental operations to be able to work with them
- Demonstrate how to work with calibrated images
- Analyze mathematical techniques for geometry analysis
- Propose Geometric Calculation tools
- Analyze object detection methodologies
- Analyze the families that make up the artificial intelligence world
- Compile the main Deep Learning Frameworks
- Generate specialized knowledge on convolutional neural networks
- Analyze the performance of CNNs for image classification
- Identify the main Datasets used in the market
- Propose architectures of the Two Stage Object Detector type
- Analyze how semantic segmentation networks work
- Evaluate traditional methods of image segmentation with Deep Learning
- Identify the structure of a segmentation project
- Analyze Autoencoders

# 04
# Educational Plan

The creation of this eminently practical program has been motivated by the high demand that currently exists for computer professionals who master the tools and techniques of Computer Vision. It consists of 120 hours distributed over 3 weeks, during which the graduate will have access to a prestigious international company, from Monday to Friday and during a full 8-hour working day. In addition, you will be accompanied by a specialized tutor who will not only watch over your learning, but will also provide you with everything you need so that you can obtain the greatest possible benefit from this experience for your development as a Machine Learning specialist.

In this completely practical proposal, the activities are aimed at the development and improvement of the necessary skills for the management of projects related to Computer Vision and image processing in its different formats and representations, and are oriented to the specific training for the exercise of the work activity with a high professional performance.

It is, therefore, a unique opportunity to add experience in a prestigious company to your resume and to demonstrate that you are capable of managing projects related to the use of this technology. During the 3 weeks you will actively participate in the tasks that are being developed in the company, learning from specialists the best techniques and professional strategies on the current application of Computer Vision.

The practical teaching will be carried out with the participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners to facilitate teamwork and multidisciplinary integration as cross-cutting skills for the practice of computer science applied to Computer Vision (learning to be and learning to relate).

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*Receive specialized education in an institution that can offer you all these possibilities, with an innovative academic program and a human team that will help you develop your full potential"*
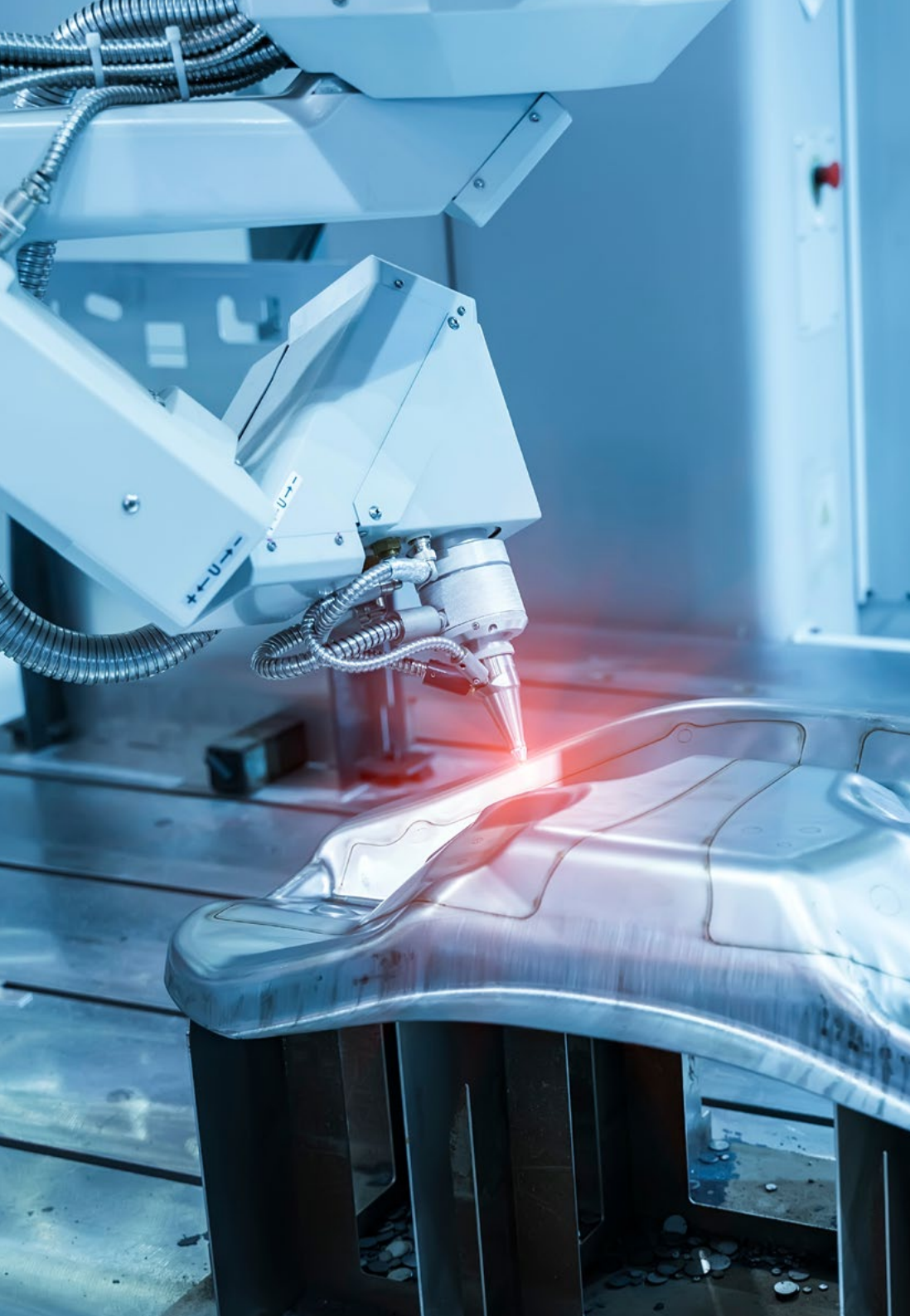
The procedures described below will be the basis of the practical part of the training, and their implementation will be subject to the center's own availability and workload, the proposed activities being the following:

| Module | Practical Activity |
|---|---|
| Digital Image Processing Techniques in Computer Vision | Adjust and apply the correct exposure, depth of field, resolution and image formats to be exported from an image capture tool |
| | Perform advanced image processing by applying filters, pixel operations and morphological operations |
| | Calibrating images to improve post-processing accuracy |
| | Program advanced image processing with facial recognition or pattern matching applications |
| | Enhancing image contouring using HDR and Photometric Stereo techniques |
| | Perform processing of surfaces, 3D objects and depth map triangulation |
| Methods of application of Deep Learning in Computer Vision | Use the most common frameworks and hardware in the implementation of Deep Learning processes |
| | Perform neural network evaluation metrics, based on Accuracy, Dice Coefficient, ROC Curve (AUC) or Cross-Validation criteria |
| | Practicing Transfer Learning, Fine Tuning and Data Augmentation in Deep Learning |
| | Prepare data and validation models for proper classification of images useful in machine vision |
| Image detection and segmentation techniques | Employ specific object detection and tracking Datasets |
| | Deploy an object detection architecture focused on machine vision |
| | Segment the images received through different Deep Learning systems |
| | Apply segmentation in videos and point clouds |
| | Perform advanced image segmentation using different tools and frameworks |
| | Carry out a semantic segmentation project, differentiating the different phases of the project |

## 05
# Where Can I Do the Internship Program?

TECH selects for each of its Internship Programs entities that meet the demanding quality criteria that define this academic center. In this way, each of the companies that become part of the international network of collaborating companies are distinguished by their trajectory and professionalism, as well as by their commitment to the growth of each of the graduates they welcome each year. In this way, a productive stay is guaranteed for the graduate, in which they can actively work and hone his/her skills through daily participation.

"

*Accessing the network of companies that TECH makes available to you is a unique opportunity to add prestigious experience to your resume"*

The student will be able to do this program at the following centers:



information-technology

## Web Experto

| Country | City |
|---------|------|
| Argentina | Santa Fe |

Address: Lamadrid 470 Nave 1 1º piso Oficina 17, Rosario, Santa Fe

Digital management and web orientation company

**Related internship programs:**
- Sales and Marketing Management
· MBA in Digital Marketing

# 06
# General Conditions

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this educational entity undertakes to take out civil liability insurance to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. In this way, the professional will not have to worry in case they have to face an unexpected situation and will be covered until the end of the practical program at the center.
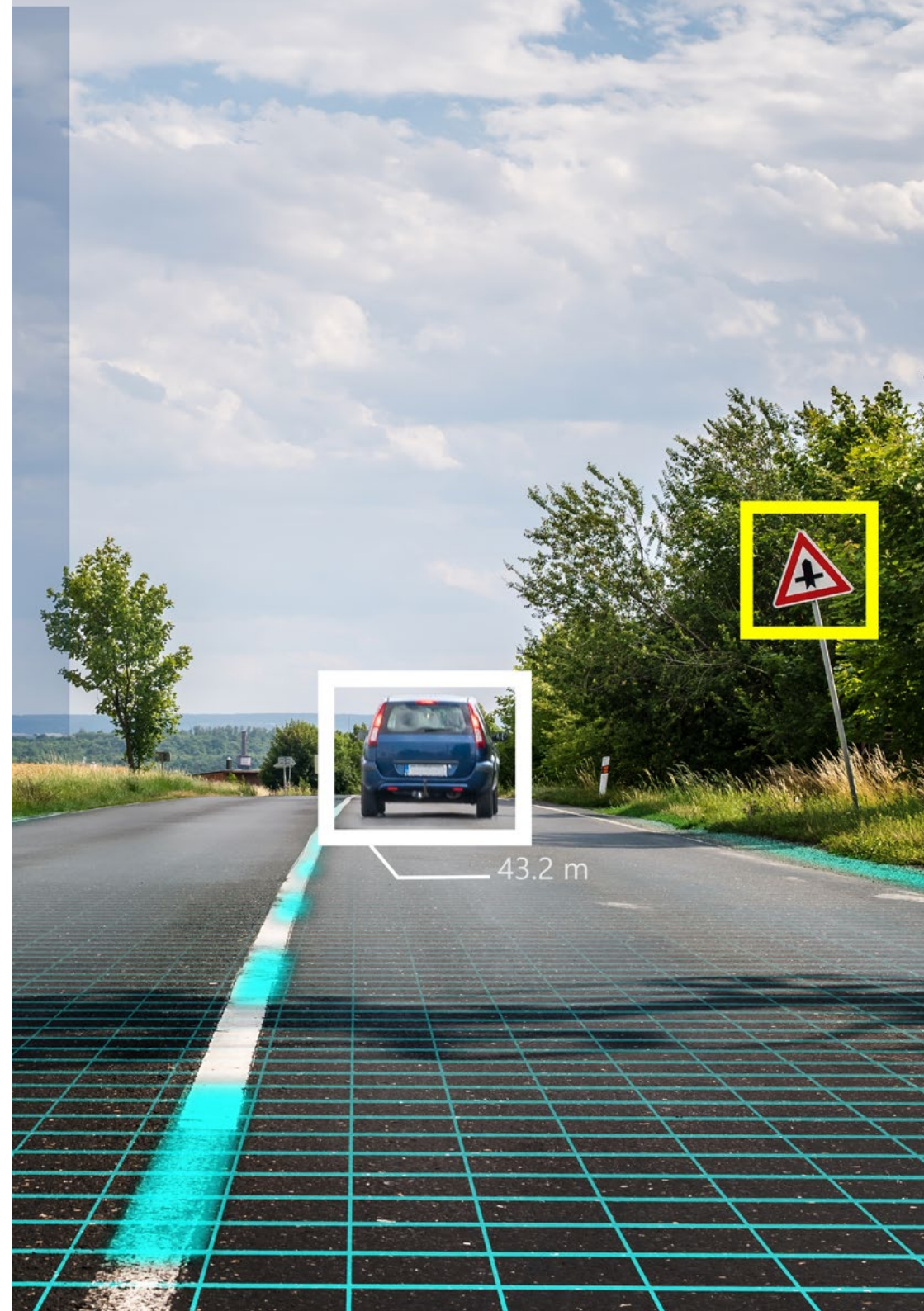
# General Conditions of the Internship Program

The general terms and conditions of the internship program agreement shall be as follows:

1. TUTOR: During the Internship Program, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor, whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the students does not show up on the start date of the Internship Program, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: The Internship Program shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Internship Program. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

7. DOES NOT INCLUDE: The Internship Program will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

# 07
# Certificate

This **Internship Program in Computer Vision** contains the most complete and up-to-date program in the professional and academic landscape.

After the student has passed the assessments, they will receive their corresponding Internship Program diploma issued by TECH Technological University via tracked delivery*.

The certificate issued by TECH will reflect the grade obtained in the test.

Title: **Internship Program in Computer Vision**

Duration: **3 weeks**

Attendance: **Monday to Friday, 8-hour consecutive shifts**

Total Hours: **120 h. of professional practice**

**tech** technological university

Awards the following

### CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having successfully passed and accredited the following program

### INTERNSHIP PROGRAM
in

## Computer Vision

This is a qualification awarded by this University, with a duration of 120 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S    techtitute.com/certificates

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