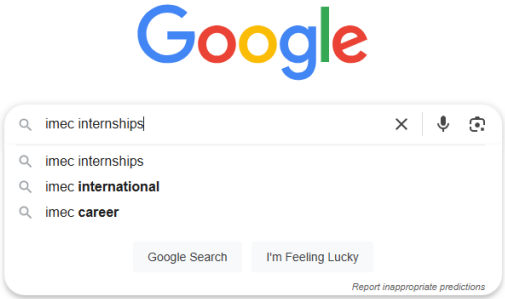
imec實習職缺網頁說明

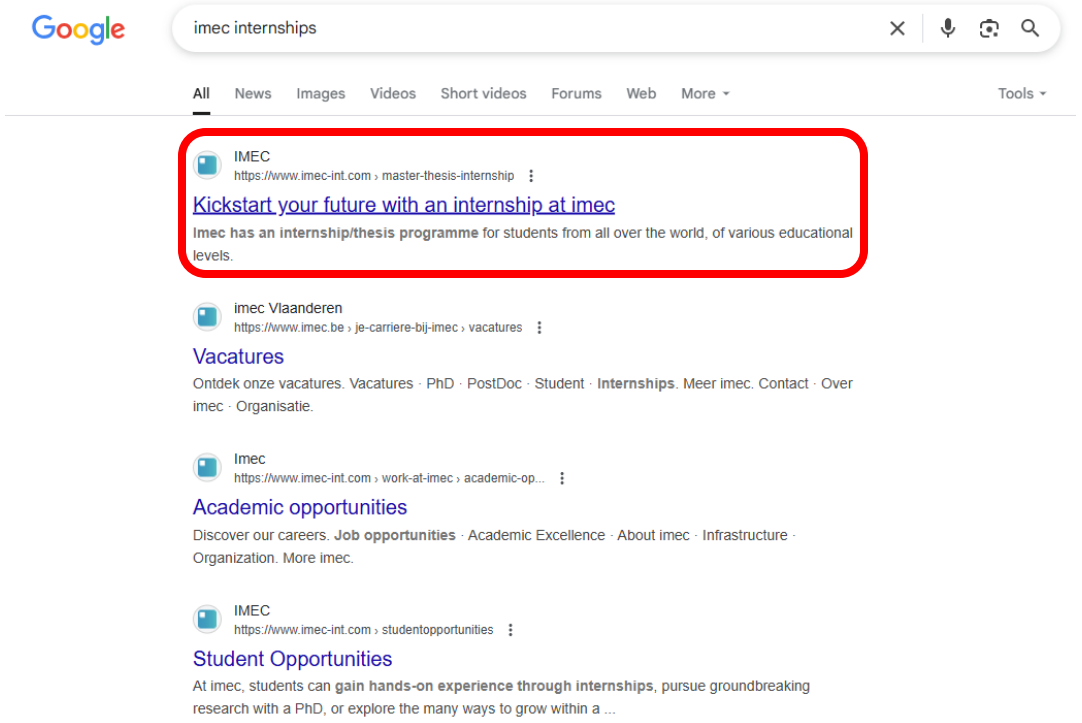
方禹

搜尋imec實習職缺網頁

Google 搜尋imec internships

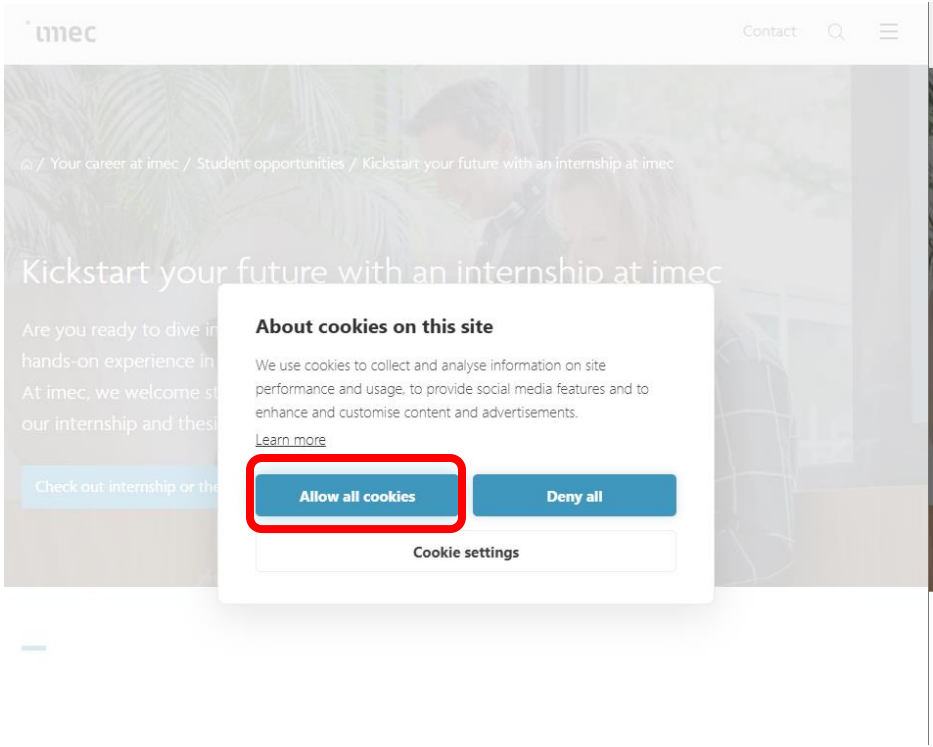


點擊搜尋結果中第一個網頁

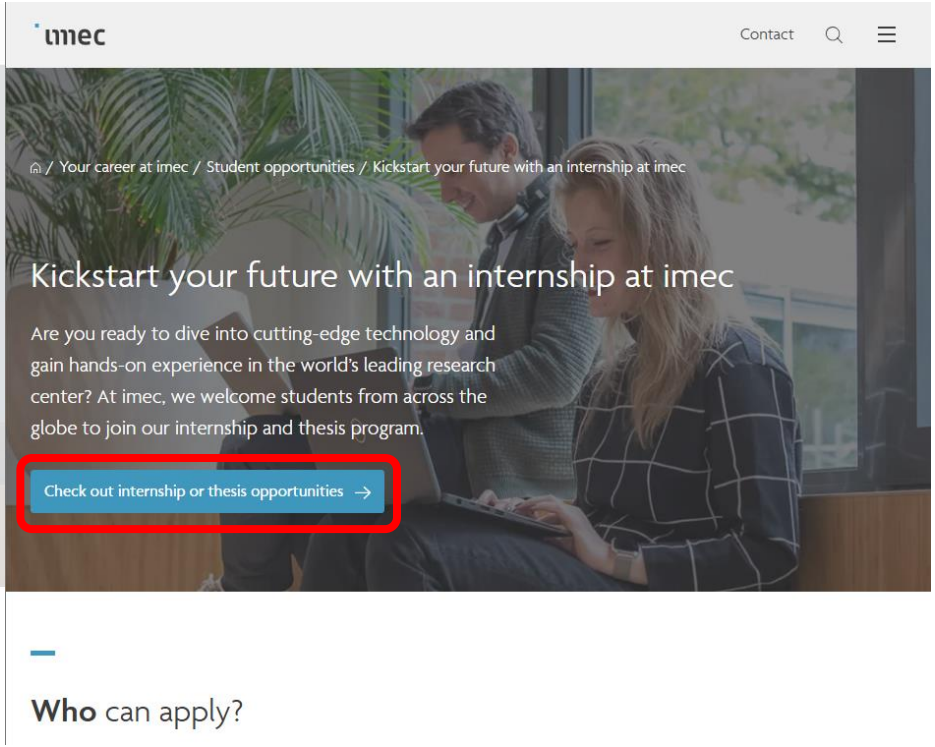


進入imec實習職缺網頁

Cookie選項：點選全部接受

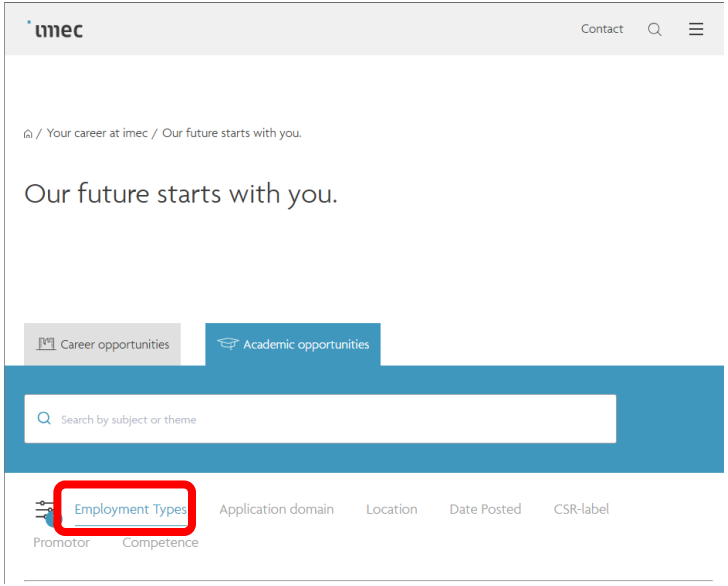


點擊查看職缺

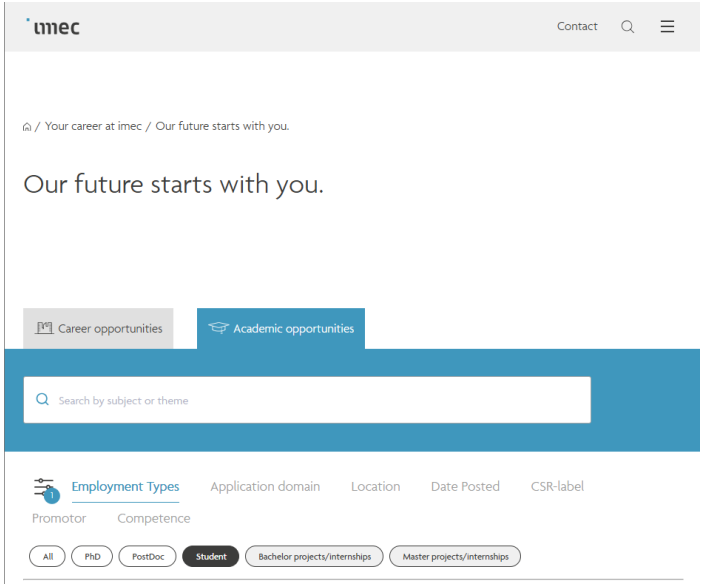


篩選職缺類型

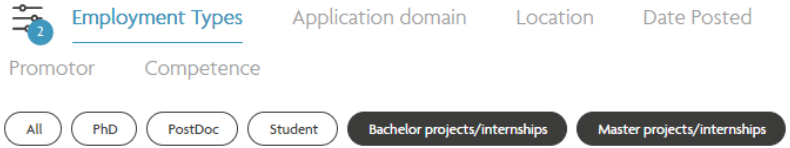
點擊”職缺類型”



預設為"student"

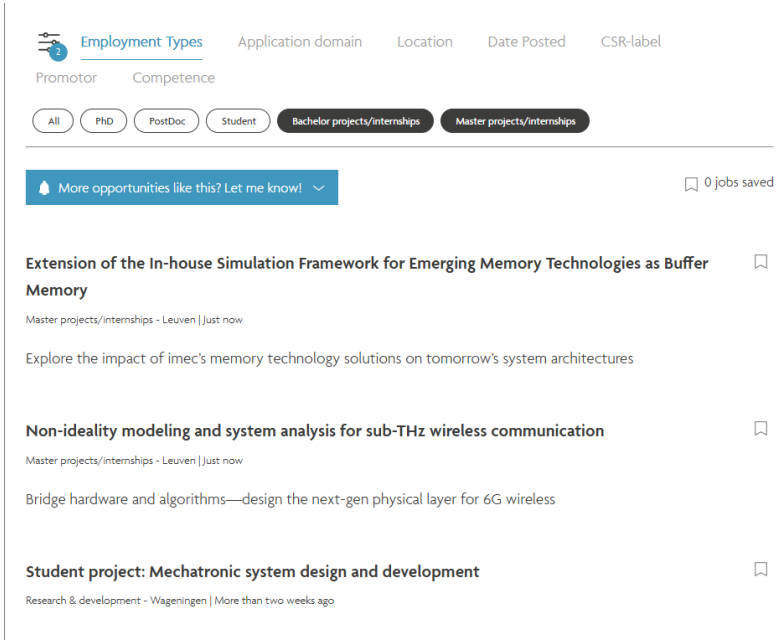


可按照需求選擇

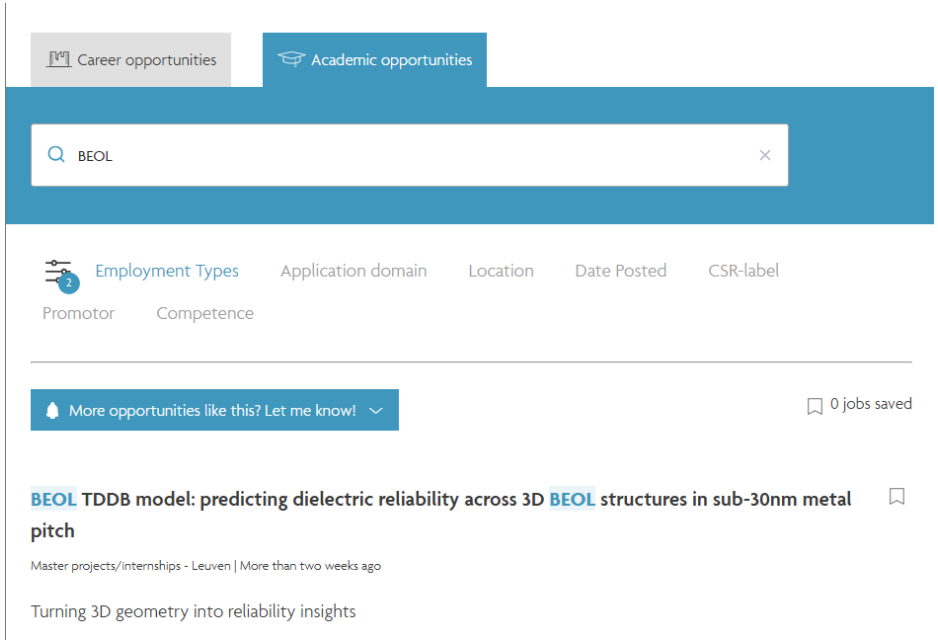


選擇實習題目

下滑即可查看職缺，點擊即可查看實習內容



也可輸入關鍵字查詢實習職缺



實習內容概覽

實習題目

點擊申請

(目前此按鍵功能為寄信給開啟職缺者)

實習內容

(目標、背景、實習任務、所需技能...等)

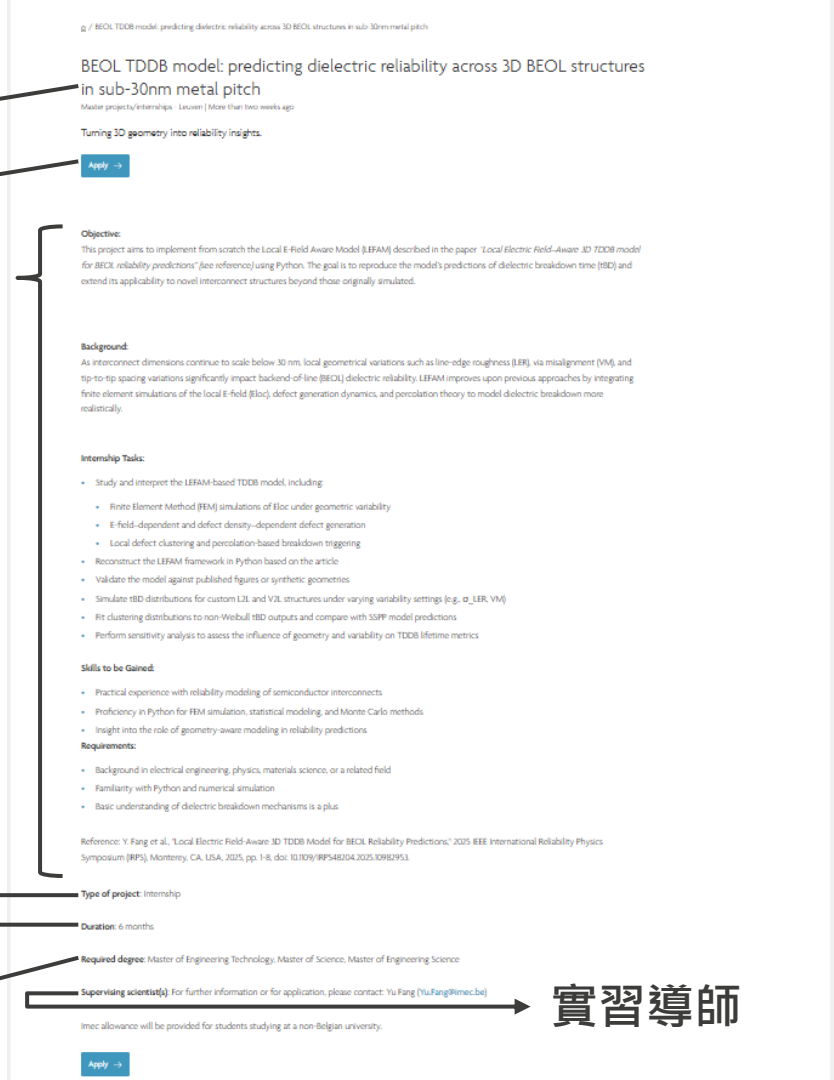
職缺類型

職缺時長

所需條件

(此為學生自我參考用，最終決定權為職缺開啟者決定)

實習導師



⌂ / BEOL TDDB model: predicting dielectric reliability across 3D BEOL structures in sub-30nm metal pitch

BEOL TDDB model: predicting dielectric reliability across 3D BEOL structures in sub-30nm metal pitch

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Turning 3D geometry into reliability insights.

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Objective:

This project aims to implement from scratch the Local E-Field Aware Model (LEFAM) described in the paper *"Local Electric Field–Aware 3D TDDB model for BEOL reliability predictions"* (see reference) using Python. The goal is to reproduce the model's predictions of dielectric breakdown time (tBD) and extend its applicability to novel interconnect structures beyond those originally simulated.

Background:

As interconnect dimensions continue to scale below 30 nm, local geometrical variations such as line-edge roughness (LER), via misalignment (VM), and tip-to-tip spacing variations significantly impact backend-of-line (BEOL) dielectric reliability. LEFAM improves upon previous approaches by integrating finite element simulations of the local E-field (Eloc), defect generation dynamics, and percolation theory to model dielectric breakdown more realistically.

Internship Tasks:

- Study and interpret the LEFAM-based TDDB model, including:
  - Finite Element Method (FEM) simulations of Eloc under geometric variability
  - E-field–dependent and defect density–dependent defect generation
  - Local defect clustering and percolation-based breakdown triggering
- Reconstruct the LEFAM framework in Python based on the article
- Validate the model against published figures or synthetic geometries
- Simulate tBD distributions for custom L2L and V2L structures under varying variability settings (e.g., σ_LER, VM)
- Fit clustering distributions to non-Weibull tBD outputs and compare with SSPP model predictions
- Perform sensitivity analysis to assess the influence of geometry and variability on TDDB lifetime metrics

Skills to be Gained:

- Practical experience with reliability modeling of semiconductor interconnects
- Proficiency in Python for FEM simulation, statistical modeling, and Monte Carlo methods
- Insight into the role of geometry-aware modeling in reliability predictions

Requirements:

- Background in electrical engineering, physics, materials science, or a related field
- Familiarity with Python and numerical simulation
- Basic understanding of dielectric breakdown mechanisms is a plus

Reference: Y. Fang et al., "Local Electric Field-Aware 3D TDDB Model for BEOL Reliability Predictions," 2025 IEEE International Reliability Physics Symposium (IRPS), Monterey, CA, USA, 2025, pp. 1-8, doi: 10.1109/IRPS48204.2025.10982953.

Type of project: Internship

Duration: 6 months

Required degree: Master of Engineering Technology, Master of Science, Master of Engineering Science

Supervising scientist(s): For further information or for application, please contact: Yu Fang (Yu.Fang@imec.be)

Imec allowance will be provided for students studying at a non-Belgian university.

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