

**BRYAN GUILCAPI****ABOUT ME**

Ph.D. in Information and Communication Technology and Engineering.
 Research on Photonic Crystals and the behavior of light. Experimental Physics & Engineering & Biosensing.
 I am also Mechatronics Engineer, Nanoelectronics MSc, Electronic Engineering MSc and Master in business administration MBA.
 I have two specializations the first is in embedded systems, and the second is in PMP Projects.
 Management Professional

EDUCATION AND TRAINING

[02/02/2012 – 02/02/2017]

Mechatronics Engineering*Universidad Tecnológica Equinoccial* <https://www.ute.edu.ec>**Address:** Rumipamba y, Bourgeois , 170147, Quito, Ecuador

[20/08/2017 – 01/12/2019]

Nanoelectronics Master in Science [MSc]*Universidad San Francisco de Quito* <https://www.usfq.edu.ec/Paginas/Inicio.aspx>**Address:** Campus Cumbayá, Diego de Robles s/n, Quito,, 170901, Cumbaya, Ecuador

[20/09/2018 – 18/09/2019]

Electrical Engineering Master in Science [MSc]*Universittà della Calabria* <https://www.unical.it/portale/>**Address:** Via Alberto Savinio, 87036, Rende, Italy

[02/02/2021 – 01/04/2022]

Master of Business Adminitration [MBA]*Universidad Internacional de la Rioja - UNIR* <https://www.unir.net>**Address:** Av. de la Paz, 137, 26006 , Logroño, La Rioja, Spain

[20/08/2017 – 01/12/2019]

Embedded System Specialization*USFQ - Universidad San Francisco de Quito* <https://www.usfq.edu.ec/Paginas/Inicio.aspx>**Address:** Campus Cumbayá, Diego de Robles s/n, Quito,, 170901, Cumbaya, Ecuador

[01/10/2021 – 01/07/2022]

Project Management Professional (PMP)® Specialization*UNIR-PMP. Universidad Internacional de la Rioja* <https://www.unir.net/ingenieria/master-project-management/>**Address:** Av. de la Paz, 137 26006 , 26006 , Logroño, La Rioja, Spain

[01/10/2019 – 22/01/2023]

PhD. Information and Communication Technology and Engineering

Università degli Studi di Napoli Parthenope <https://www.uniparthenope.it>

Address: Via Acton F. , 80133, Napoli, Italy

WORK EXPERIENCE

[10/09/2016 – 20/08/2017]

Mechatronics engineer

PRODUPLAS <https://produplas.negocio.site>

Address: Via Santa Teresita, Jesus del Gran Poder, 060501, Guano, Ecuador

City: Riobamba

Country: Ecuador

Business or sector: Professional, scientific and technical activities
Automation, control and maintenance of machinery for the production of plastic raffia and rop.

[30/08/2017 – 08/03/2018]

Mechatronics engineering technician

CARTEC S.A. <https://cartec.business.site>

Address: Av. Amazonas 6155 y Av. El Inca, 170138, Quito, Ecuador

City: Quito

Country: Ecuador

Control and trainer of new tools for the automobile industry. Wholesale and retail trade; repair of motor vehicles and motorcycles

[01/11/2019 – 01/01/2020]

RESEARCHER, PHD STUDENT

Istituto per la microelettronica e microsistemi (IMM) - CNR <https://www.cnr.it>

Address: 80131, Napoli, Italy

City: Napoli

Country: Italy

Name of unit or department: IMM

Business or sector: Education
Professional, scientific and technical activities

[01/09/2021 – 30/12/2021]

Advisory panel to the Director

Red Mundo Atlántico <https://redmundoatlantico.com>

Address: R. Enrique Mariñas Romero, 34, 15009, Coruña, Spain

City: Coruña

Business or sector: Human health and social work activities

Generate a new business plan within the company.

Generate innovative ideas to attract new consumers to occupy the service of the company.

[01/06/2022 – 30/09/2022]

Guest Researcher

St Andrew's University

City: St Andrew's

Country: United Kingdom

Carry out research, nano-photonics, characterization of biosensors.

[01/02/2020 – 30/01/2023]

RESEARCHER, PHD STUDENT

Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (ISASI) - CNR

City: Napoli

Country: Italy

Photonic crystal research and the behavior of the light.

[01/09/2022 – Current]

Literature docent

Universidad Internacional de Valencia VIU

City: Valencia

Country: Spain

University professor of robotics. (Night time)

University professor of intelligent systems techniques. (Night time)

University professor reviewer of master's thesis in BIG DATA.

University professor reviewer of bachelor thesis of Informatics Engineering.

LANGUAGE SKILLS

Mother tongue(s): Spanish

Other language(s):

English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

Italian

LISTENING B1 READING B1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

Russian

LISTENING A1 READING A1 WRITING A1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

DIGITAL SKILLS

Microsoft Word | Microsoft Excel | Microsoft Powerpoint | Google Drive | Microsoft Office | Google Docs | Social Media | Internet user | Programming Languages: C, C++, Python, Matlab | Good familiarity with MATLAB, Simulink | LUMERICAL FDTD | Photonic simualtors, including Lumerical FDTD and MODE and Photon Design suite | Digital Device Arduino | RSoft Photonic Device Tools | DS Solidworks (Optimal Knowledge)

PUBLICATIONS

[2021] [**Label-free DNA biosensing by topological light confinement**](#)

Large-area and transparent all-dielectric metasurfaces sustaining photonic bound states in the continuum (BICs) provide a set of fundamental advantages for ultrasensitive biosensing. BICs bridge the gap of large effective mode volume with large experimental quality factor. Relying on the transduction mechanism of reactive sensing principle, herein, we first numerically study the potential of subwavelength confinement driven by topological decoupling from free space radiation for BIC-based biosensing. Then, we experimentally combine this capability with minimal and low-cost optical setup, applying the devised quasi-BIC resonator for PNA/DNA selective biosensing with real-time monitoring of the binding event. A sensitivity of 20 molecules per micron squared is achieved, *i.e.* ≈ 0.01 pg. Further enhancement can easily be envisaged, pointing out the possibility of single-molecule regime. This work aims at a precise and ultrasensitive

approach for developing low-cost point-of-care tools suitable for routine disease prescreening analyses in laboratory, also adaptable to industrial production control.

[2022]

High-Q Photonic Aptasensor Based on Avoided Crossing Bound States in the Continuum And Trace Detection of Ochratoxin A

High quality factor (Q) optical biosensors find many applications, from environmental monitoring to food safety and clinical diagnostics. Bound states in the continuum (BICs) are high- Q modes that can be implemented in planar large-area nanostructures for facile microfluidic integration and straightforward interrogation. While a symmetry-protected BIC has a Q -factor that dramatically varies with the interrogation angle, the interference leading to the Friedrich-Wintgen type BIC is herein engineered to make high- Q flat dispersion bands over a large set of interrogation angles. A thorough numerical study is first carried out to adapt the process to an aptasensor scheme. Then, experiments are carried out tracking the high- Q bands evolution forming around the avoided crossing point as a function of the interaction of ochratoxin A with the bioprobe. An excellent LOD of 2.3 pg/mL is achieved, and a large FOM > 160 RIU $^{-1}$ is estimated despite the sub-monolayer adsorbate film of thickness ~ 10 nm. The proposed sensing architecture can be extended to other mycotoxins and small molecules, finding application in many fields for monitoring physical and biochemical processes.

DRIVING LICENCE

Cars: B

HONOURS AND AWARDS

[18/05/2019] **Third Position Italian Taekwondo University Awarding institution:** CNU - University National Championship

Third position in combat.

Third position in poomsae.

[15/07/2020] **Taekwondo Sport, Best Athlete Awarding institution:** CUS- UNICAL

University champion in Italy in the area of taekwondo

ORGANISATIONAL SKILLS

Organisational skills

- Decision.
- Commitment.
- Leadership.
- Meticulousness.
- Delegation.
- Assumption of risks.

HOBBIES AND INTERESTS

European Personal Trainer- Level 2

Paint and Drawing

Guitar Player

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

- Ability to work as a team
- Respect for the ideas of others.
- Interpretation and implementation of the ideas of the group.
- Flexibility and Acceptance.

VOLUNTEERING

[06/06/2012 – 08/08/2017] **Volunteer in risk management and rescue** Cruz Roja del Ecuador

- First aid, volunteer in risk management and rescue.
- Dog trainer.