



UNIVERSITE D'ABOMEY-CALAVI

ECOLE POLYTECHNIQUE D'ABOMEY-CALAVI

Doc. No. : EPAC-UAC/OSC/0001

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Student Chapter

Report

(Annual Year of 2022)

Chapter Name: EPAC-UAC Student Chapter of the Optica

Chapter Approval (by Optica): 25th November 2022

Chapter Advisor: Dr SANYA Max Fréjus (*University member*)

Chapter Executive Team (Students Core Team) :

President – MAGNIDET Fifamè Merci-Ange

Vice President – AFOUDA Serge Oluwatogni Kolawalé

Secretary – ZINZINDOHOUE Yasmine Fifali

Treasurer – CODJIA Mahouwèna Canisius Boris

No. of students registered in society: 10

OBJECTIVES

EPAC-UAC Student Chapter of The Optica is a technical platform that aims to:

- promote and actively delivers scientific and technical information on optical science and photonics engineering among the student and local communities in Benin;
- promote interaction with the Optica society members and its student organizations with a focus on information sharing and networking to raise awareness of post-graduation opportunities for students;
- to ensure quality information and inspiring interactions through publications, meetings and membership;
- locally innovate based on optical sciences and photonics engineering to solve societal concerns in Benin and Africa.

ANNUAL GOALS OF THE STUDENT'S CHAPTER

- **GROWTH & MEMBERSHIP:** Our goal is to have a wider impact on our community. Thus, we will increase our reach with social media and through workshops, highlighting the benefits of OPTICA to be known and enroll more students in the chapter. By starting to include people at college and campus level, the more helping hands we have, the better it is to have a wider impact on our community.
- **EDUCATION:** Get involved in education at the lowest level possible and stimulate young students' interest in the field of optics and photonics by teaching the basics of the field and/or making demonstrations of innovations we've made.
- **INNOVATION:** Participate in our community by conducting research and proposing innovative solutions to community-related problems. In addition, we will explore research venues for the publication of articles.
- **PROFESSIONAL DEVELOPMENT & LEADERSHIP:** Organize hands-on sessions to talk about optics and photonics technical-related subjects and favorite networking between students and chapters (in Africa and overseas).

Activity No. 1: (Before Chapter Approval by OPTICA Society)

- Name of the Activity:** Students engagement for optica student chapter creation
- Student chapter:** EPAC-UAC Student Chapter of The OPTICA
- Organizer(s):**

Name: Dr Max Fréjus SANYA **Enrollment No:** 2019779
Mobile: (00229) 61332652

- Objectives:** The objective of this live event is to present OPTICA society and benefits to University of Abomey-Calavi students and their engagement in order to start an optica EPAC-UAC student chapter.
- Speaker:** Dr. Max Fréjus O. SANYA
- Details of the Student Attendance:** (See the list below)

First Name	Last Name	Email
Fifamè Merci-Ange	MAGNIDET	fifame.magnidet@outlook.com
Serge Oluwatogni Kolawalé	AFOUDA	sergeafouda81@gmail.com
Mahouwèna Canisius Boris	CODJIA	bocacodji@gmail.com
Yasmine Fifali	ZINZINDOHOUE	zinzinyasmina@gmail.com
Kouétcha Fernando Don de Dieu	DJOKI	fernandodjoki@gmail.com
Maxime Joël	AHANDESSI	m.ahandessi1@gmail.com
Djafarou	SOULEMANE ALASSANE	soulemanedjafararou@gmail.com m
Abdias Ange	AGBO	abdiasagbo@gmail.com
Jekhiel	CHABI SARE	chabijekhiel@gmail.com
Biaou David Barthélémy	KOCHONI	davidkochoni111@gmail.com

7. Summary of the event:

On 02th August 2022, Dr Max Fréjus O. SANYA has organized an online live event with student of the university of Abomey-Calavi. First, the event's main goal was to present the OPTICA society, its activities, and its membership benefits to students. Secondly, the target was also to engage students in creating a student chapter for our university. After one hour online meeting, it's was decided by all participants to be engaged in the creation of the first nowadays EPAC-UAC Student Chapter of The OPTICA in Benin. During the next week, all the participants were registered in Optica society for one year membership.

Activity No. 2: (Before Chapter Approval by OPTICA Society)

- 1. Name of the Activity:** Election of the Optica student chapter officers board
- 2. Student chapter:** EPAC-UAC Student Chapter of The OPTICA
- 3. Organizer(s):**

Name: Dr Max Fréjus SANYA **Enrollment No:** 2019779

Mobile: (00229) 61332652

- 4. Objectives:** Nomination of the chapter executive board.

- 5. Speaker:** Dr Max Fréjus O. SANYA

- 6. Details of the Student Attendance:** (See the list below)

Optica Member ID	First Name	Last Name	Email
2032690	Fifamè Merci-Ange	MAGNIDET	fifame.magnidet@outlook.com
2020987	Serge Oluwatogni Kolawalé	AFOUDA	sergeafouda81@gmail.com
2020986	Mahouwèna Canisius Boris	CODJIA	bocacodji@gmail.com
2020989	Yasmine Fifali	ZINZINDOHOUE	zinzinyasmina@gmail.com
2020993	Kouétcha Fernando Don de Dieu	DJOKI	fernandodjoki@gmail.com

2020988	Maxime Joël	AHANDESSI	m.ahandessi1@gmail.com
2020990	Djafarou	SOULEMANE ALASSANE	soulemanedjafararou@gmail.com
2020985	Abdias Ange	AGBO	abdiasagbo@gmail.com
2021229	Jekhiel	CHABI SARE	chabijekhiel@gmail.com
2020996	Biaou David Barthélémy	KOCHONI	davidkochoni111@gmail.com

7. Summary of the event:

On 30th August 2022, Dr Max Fréjus O. SANYA invited all the participants to a meeting in order to elect the executive boards of our chapter. The event has been managed by Dr. Max Fréjus SANYA who is the chapter Advisor. After describing and presenting the goal of each member of the executive board officers of an Optica student chapter, a suit of elections were held and resulted by the following list.

Optica Member				
ID	First Name	Last Name	Email	Role
2032690	Fifamè Merci-Ange	MAGNIDET	fifame.magnidet@outlook.com	President
2020987	Serge Oluwatogni Kolawalé	AFOUDA	sergeafouda81@gmail.com	Vice President
2020986	Mahouwèna Canisius Boris	CODJIA	bocacodji@gmail.com	Treasurer
2020989	Yasmine Fifali	ZINZINDOH OUE	zinzinyasmina@gmail.com	Secretary
2019779	Max Fréjus Owolabi	SANYA	frejus.sanya@uac.bj	*Advisor

At the end, Prof. Max Fréjus SANYA promised to complete the chapter registration form in the Optica website. This has conducted us for the chapter approval the 25th November 2022.

Activity No. 3: (After Chapter Approval by OPTICA Society on the 25th November 2022)

- 1. Name of the Activity:** First draft of the chapter's bylaws and rules
- 2. Student chapter:** EPAC-UAC Student Chapter of The OPTICA
- 3. Organizer(s):** Executive board officers supervised by the Advisor
- 4. Objectives:** The objective of this activity is to provide a first draft of the Chapter's bylaws and rules for validation in plenary.
- 5. Student Attendance:** ([See the Attendance Link](#))
- 6. Summary of the event:**

This activity is still ongoing for validation. In fact, it was decided by the executive board officers in order to propose and define the chapter's bylaws and rules. For that, all the participants have been split into small groups of members with the aim of proposing a draft to the chapter's executive and members. The secretary and vice-president have then been charged for collecting all the drafts provided by each group into one proposal document for the chapter. The final validation is scheduled to take place in January 2023. The draft is written in French language (National work language in Benin) and available [here](#). We are online and active on facebook, twitter and linkedIn networks by :

- <https://twitter.com/UACoptica?t=YEm0EUDSIozzkX26Ai9p6Q&s=09>;
- <https://www.facebook.com/epac.uac.chapter.optica?mibextid=ZbWKwL>;
- <https://www.linkedin.com/in/uac-students-chapter-of-optica-0a4879258>;
- <https://www.linkedin.com/company/epac-uac-student-chapter-of-the-optica/>;
- For our online activities, we always use google meet and zoom.

Activity No. 4:

1. **Name of the Activity:** Proposal of innovative prototypes based on optics and photonics technologies for the well-being of Beninese populations
2. **Student chapter:** EPAC-UAC Student Chapter of The OPTICA
3. **Organizer(s):** Executive board officers supervised by the Advisor
4. **Objectives:** The objective of this event was to harness an environment of students with innovative ideas and skills, using which they could find solutions to real-life scenarios.
5. **Budget used:** Part of the \$350 USD startup funds provided by Optica society
6. **Student Attendance:** ([See the Attendance List](#))
7. **Summary of the event:**

The idea of this activity is to share with Beninese communities and universities, innovative projects realized by our members using optics and photonics engineering. We have developed two projects:

- **Design and realization of a speedometer prototype**

Abstract: Speeding is a common practice, widely observed on the roads in Benin. Late for work, the desire to run traffic lights, the presumed need for urgency, overtaking, are among the pretexts given by drivers as a result of this bad driving practice. This causes most of the time, deplorable cases of road accidents. In this paper, using an Arduino Uno R3 board assembled with some electronic components, a speedometer prototype has been designed and implements a speedometer algorithm. The said prototype works well and allows to consider in the near future, the manufacture of radars "made in Benin". It will thus be easier to deploy devices capable of helping to regulate the flow of traffic on our roads, to impose speed limits while ensuring road safety.

- **Design and realization of a LiFi (Light-Fidelity) prototype for data transmission in museums**

Abstract: In Benin, as in most African countries, the history of the various tourist sites and art objects in a museum requires the presence of a resource person or guide to tell or explain certain facts. However, this history can be poorly told, distorted or vary from one tourist to another, depending on the state of mind or desire of the person telling it. This could contribute to distort the tourist atmosphere and reduce the attraction to certain tourist sites and museums. In our museums, it is common to find LED-based light sources for light decoration or lighting. In

addition, in recent years, smartphones are increasingly used during visits to museums and tourist sites to capture images and videos as souvenirs.

The idea of using LED lighting to transmit information to tourists' smartphone cameras is an innovative digital dimension for museum visits. This is the objective of this work, which resulted in the design of a functional LiFi prototype capable of telling the story of art objects in museums. The applications resulting from this innovation are multiple and allow us to foresee, for example, another means of access to the Internet through the lamps of our homes.

8. Photographs:

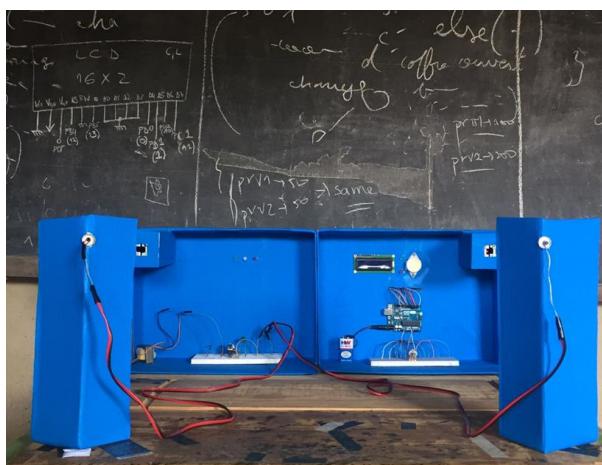


Fig. 1: Speedometer prototype designed

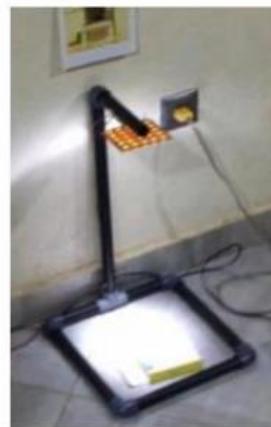


Fig. 2: LiFi Prototype designed for museum

(@source: EPAC-UAC Student Chapter of the Optica)

Activity No. 5:

- Name of the Activity:** Participation to BWAI 2022 (Benin Workshop on Artificial Intelligence)
- Student chapter:** EPAC-UAC Student Chapter of The OPTICA
- Organizer(s): Organizer(s):**

Name : Dr. Max Fréjus SANYA (**Advisor**) **Enrollment No:** 2019779
Mobile : (00229) 61332652

- Objectives:** The objective of this activity was first to promote and deliver scientific and technical information on optical science and optical engineering among the student and local communities that have attended the [Benin Workshop on Artificial Intelligence](#)

[\(BWAI\)](#) organized by IFRI (Institut de Formation et de Recherche en Informatique) of University of Abomey-Calavi. The second objective was to ensure quality information and inspiring interactions through publications/posters and live demo of our innovative projects.

5. **Budget used:** End of the **\$350 USD** startup funds provided by Optica society **with additional budget of the chapter.**
6. **Student Attendance:** **200+** (NA)
7. **Summary of the event:**

The activities of the BWAI took place in the Etisalat amphitheater of the University of Abomey-Calavi from December 19 to 23, 2022. The meeting brought together participants from all over the world in face-to-face and remote through the Internet. Our Chapter was there also and we have presented our innovative prototypes (mentioned in Activity n°4). Our members shared their contribution to all participants and get good feedbacks about our optical and photonics prototypes. Our Advisor, Dr Max Fréjus SANYA was Session chair at the workshop and has promoted our chapter by inviting the participants to join us in order to demystify all the concept of optics sciences and photonics engineering, as for example : the LiFi concept is new to all participants at the BWAI 2022. It will be great for us to organize ourself workshop to more impact our community. Please feel free to download the **attached posters (n°1, 2, and 3)** we have presented (in French language) at this [BWAI 2022 event.](#)

8. Photographs:



Fig. 3: Mr BEDEBOU Boris (blue, in the middle of the panel) answering questions about its poster n°1 (@source: EPAC-UAC Student Chapter of the Optica).



Fig. 4: [Mr KOCHONI David](#) and [Mr BRISSO Nazif](#) (in the middle of the panel) answering questions about their posters (@source: EPAC-UAC Student Chapter of the Optica).



Fig. 5: Picture of BWAI December 21th, 2022 participants at 02PM, (@source: EPAC-UAC Student Chapter of the Optica).

GOALS OF THE CHAPTER FOR 2023

As activities planned for the year 2023, we intend to:

- proceed to the adoption of the statutes and internal regulations of the chapter;
- perfect the LIFI prototype already realized by using more advanced components;

- carry out one FSO (Free Space Optics) prototype in order to study its transmission performance in Benin because of the lowest penetration rate of the internet deployment. We will need a budget from Optica society in order to do that;
- ensure a greater visibility of the chapter with social media and by organizing more conferences in optical and photonics fields;
- explore new avenues of research on photonic systems with AI systems integration;
- expand the chapter with the integration of new members and attend to many international conferences for more impact.

<u>Chapter President</u>	<u>Chapter Vice President</u>
 Mrs. MAGNIDET Fifamè Merci-Ange	 Mr. AFOUDA Serge Oluwatogni Kolawalé

Chapter Advisor (Head)

Dr. Max Fréjus Owolabi SANYA

Department of Computer Science and Telecommunications engineering at EPAC-UAC
 Deputy-Coordinator of the Computer Science and Telecommunications Research Master at ED-SDI/UAC,
 Benin