COLLEGE OF COMPUTING AND INFORMATION SCIENCES(COCIS)

NEWSLETTER

July – September 2026: Issue: 3

AirQo NAMED EARTH SHOT PRIZE FINALIST FOR BRINGING AIR-QUALITY DATA TO MILLIONS OF AFRICANS



Yo-Waste transforms urban waste managment with on demand digital collection

CoCIS awards 34 fellowships to MSc and PhD students

Mak AI-Health Lab takes homegrown diagnostic AI to global and national platforms

Makerere internship builds cofindence and workplace skills or YMCA student

Word from the Principal



Prof. Engineer Bainomugisha
Principal, College of Computing and Information Sciences

Dear Students, Staff, Alumni, Partners and Friends of CoCIS,

It is my pleasure to welcome you to the third edition of the College of Computing and Information Sciences (CoCIS) Newsletter, covering our journey from July to September 2026. This issue highlights the remarkable achievements, innovations and milestones that continue to position our College as a leader in computing, digital transformation and impactful research.

I am particularly proud of the global recognition earned by AirQo as a finalist for the 2026 Earthshot Prize. This achievement demonstrates the power of locally developed solutions to address global challenges and reflects the excellence of our researchers, students and partners. It is a testament to how innovation at Makerere University is creating meaningful impact across Africa and beyond. We also celebrate 34 postgraduate and postdoctoral fellowships awarded across our departments. These fellowships empower our Master's and PhD students to develop localized AI, data science, and technology solutions addressing critical real-world challenges.

This edition also captures an important period of leadership transition within the College. As I assume the responsibility of serving as Principal, I am encouraged by the strong foundation built by my predecessors and the dedication of our staff and students. Together, we shall continue pursuing excellence in teaching and learning, advancing globally impactful research, strengthening innovation and technology transfer, and fostering a supportive environment where every member of our community can thrive.

The stories featured in this newsletter showcase how CoCIS research is transforming lives through digital solutions in environmental monitoring, healthcare, waste management, financial inclusion and community development. These achievements reaffirm our commitment to ensuring that knowledge generated within the University addresses real-world challenges and contributes to national and global development.

I thank our staff, students, alumni, partners and stakeholders for their continued support and commitment to the College's mission. Let us continue working together to build a College that is recognized for producing excellent graduates, groundbreaking research and innovations that create lasting societal impact.

I invite you to read this issue and celebrate the achievements of our vibrant CoCIS community.

> “It is a testament to how innovation at Makerere University is creating meaningful impact across Africa and beyond.

Prof. Engineer Bainomugisha
PRINCIPAL

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College Fact File

122
Total Staff
87 Academic. 30 Non Teaching

2,572
Students

Courses Offered

6	7	4	5
Undergraduate	Masters	PGD	PhD

New courses

• BSc Data Communication and Software Engineering

• Master of e-Governance Technologies and Services

AirQo named Earthshot Prize finalist for bringing air-quality data to millions of Africans



Mak AirQo technician installing Air quality monitoring devise in Kisumu Kenya

AirQo, a clean-air technology initiative founded at Makerere University, was on Sept. 18 named a finalist for the 2026 Earthshot Prize, gaining international recognition for expanding access to air-quality data across Africa and helping governments and communities tackle air pollution.

500+
air-quality monitors deployed

16
Cities

9
African Countries

Selected in the Clean Our Air category, AirQo is among 15 finalists chosen from nearly 7,000 nominations submitted from 169 countries. The recognition underscores the initiative's role in addressing one of Africa's most pressing environmental and public health challenges: the shortage of reliable air-quality data in rapidly growing cities.

Founded in 2015 by Makerere University researchers, AirQo has deployed more than 500 air-quality monitors across 16 cities in nine African countries, including Uganda, Kenya, Nigeria, Ghana, Senegal, Cameroon, Zambia, Mozambique and South Africa. The network delivers real-time air-quality information to communities with a combined population of more than 30 million people.

The initiative combines low-cost sensors, open data

platforms and artificial intelligence to generate pollution data in settings where traditional monitoring systems are often too costly or difficult to maintain. Designed for African conditions, the technology can withstand dust, unstable electricity supplies and limited internet connectivity. AirQo also uses mobile sensors mounted on boda bodas to capture street-level pollution data.

> *"Air pollution has remained invisible across too many African cities because the data needed to understand it has been scarce. Being named an Earthshot Prize finalist will help us scale this infrastructure, equip more African technologists and city leaders, and make reliable air-quality data a public good,"*
>
> Prof. Engineer Bainomugisha, AirQo founder

> *"Every year, our finalists give me renewed optimism. They show us that, even as the environmental challenges remain urgent, extraordinary people around the world are already proving that progress is possible."*
>
> HRH Prince William, founder and president of The Earthshot Prize

Using artificial intelligence and machine-learning tools, the platform calibrates sensors, forecasts pollution levels and identifies pollution hotspots. Data is shared through dashboards, digital platforms and application programming interfaces, making it accessible to policymakers, researchers and the public.

AirQo founder and Makerere University computer science professor Bainomugisha said the initiative was created to make air pollution visible through credible local data.

AirQo says its data contributed to Uganda's first national air-quality regulations and has supported traffic-management measures in Kampala, demonstrating how evidence-based monitoring can influence policy and urban planning.



Mak AirQo P1 Prof. Engineering Bainomugisha and team during the installation of low-cost air quality monitoring machines in an African city.

As a finalist, AirQo will receive support to expand operations, attract investment and strengthen partnerships. The organisation plans to extend its network to 10 additional African cities and develop an open-source air-quality platform featuring a conversational AI interface.

HRH Prince William, founder and president of The Earthshot Prize, said the finalists demonstrate that scalable environmental solutions are already making a difference worldwide.

The five Earthshot Prize winners will be announced in Mumbai, India, on Nov. 17.

Winners announced 17 November

The five Earthshot Prize Winners will be announced in Mumbai, India

CoCIS in the news

Daily Monitor

https://www.monitor.co.ug/uganda/news/national/ugandan-founded-airqo-named-among-15-earthshot-prize-finalists-5600810

Nile post

https://nilepost.co.ug/environment/372260/ugandas-airqo-named-2026-earthshot-prize-finalist-for-tackling-africas-air-pollution

Earthshot prize

https://earthshotprize.org/winners-finalists/airqo/

Airqo

https://airqo.net/home



Dr. Nabende hands over college with staffing and programme challenges highlighted

New Principal sets agenda for excellence, research and innovation

The College of Computing and Information Sciences (CoCIS) at Makerere University has entered a new era of leadership following the appointment of Prof. Engineer Bainomugisha as Principal. He officially assumed office on September 10, 2026, succeeding Prof. Tony Oyana after a brief transitional period during which Dr. Peter Nabende served as Acting Principal.

Speaking during the handover ceremony, Prof. Bainomugisha expressed gratitude to the University Council, Senate, University Management and the Search Committee for entrusting him with the responsibility of leading the college. He pledged to work closely with staff, students and stakeholders to advance the college's strategic objectives and address emerging challenges through a collaborative leadership approach.

The new Principal outlined an ambitious vision focused on academic excellence, impactful research, innovation and technology transfer, and the creation of a supportive working and learning environment. Emphasizing the need to strengthen the quality of graduates produced by the college, he said, "I would like to see a College that is known to produce graduates who excel in knowledge and practical skills." He added that teaching and learning should remain aligned with Makerere University's strategic priorities and the evolving demands of society.

> . "*I would like to see a College that is globally recognised to undertake impactful research. And I would like to see a College that is also known for innovations and technology transfer,*"
> Prof. Engineer Bainomugisha



Prof. Engineer Bainomugisha takes Principal's seat after the handover

Prof. Bainomugisha also underscored the importance of strengthening the college's global research profile. "I would like to see a College that is globally recognised to undertake impactful research. And I would like to see a College that is also known for innovations and technology transfer," he said. His remarks reflected a commitment to building on CoCIS's growing portfolio of research projects and innovations in areas such as artificial intelligence, natural language technologies, agriculture, education and health.

The leadership transition comes at a time when CoCIS is expanding its academic programmes and research activities while facing significant challenges. In his handover report, Dr. Nabende highlighted concerns over staffing shortages, rising staff attrition, increasing student enrolment, curriculum review processes and preparations for the implementation of competence-based education and training requirements by 2027/2028.

Despite these challenges, the college continues to register growth in research and innovation, with 24 externally funded research projects and numerous staff and student seed-grant initiatives underway. Dr. Nabende urged the college to sustain this momentum while addressing operational constraints that could affect programme delivery and institutional growth.

Prof. Bainomugisha acknowledged the challenges ahead and called for patience, teamwork and collective responsibility in addressing them. "There are many challenges that the outgoing principal has outlined, and I believe that we can work together to address some of those challenges," he said. "Obviously, we'll address one challenge at a time. We cannot promise that we'll address all of them on day one."

With the support of staff, students and university leadership, the new Principal begins his tenure tasked with strengthening academic quality, expanding research impact, promoting innovation and technology transfer, and improving the welfare and experience of the entire CoCIS community.



Students and staff welcome new Principal

CoCIS student chairperson Jim Ainamani, a fourth-year Bachelor of Software Engineering student, congratulated Bainomugisha on his appointment and pledged students' cooperation.

Ainamani said students' experiences at the college are significantly influenced by its leadership and expressed optimism that the new Principal would continue the tradition of caring leadership.

"For the time I've been here, for the three and a half years, I have been able to witness caring principals, from Professor Tony to our outgoing principal," he said.

He said students hoped to work with Bainomugisha, learn from his leadership and benefit from an improved experience at the college.

Staff pledge cooperation

Dr. Swaib Kyanda Kaawaase, Head of the Networks Department, delivered a vote of thanks on behalf of the college, welcoming Bainomugisha and pledging staff cooperation.

Dr. Kaawaase said staff expected positive developments under the new leadership and would work with the Principal to make CoCIS more innovative and globally recognised.

He also highlighted staff welfare and student experience as areas where cooperation would be important.

"We pledge cooperation in all aspects to ensure that our college can be the one that can be talked about in the rest of the globe as being very innovative," he said.

He further pledged cooperation to ensure students receive the best possible education and staff welfare is strengthened.

Nabende takes over as Acting CoCIS Principal as Oyana concludes eight-year `tenure





From left to right: Prof Tonny Oyana hands over to Acting Principal Dr. Peter Nabende; Dr. Nabende giving his acceptance remarks during the handover; Prof. Oyana, Prof. Henry Arinaitwe and Dr. Nabende after the handover in the Principal's Office

Dr. Peter Nabende assumed office as Acting Principal CoCIS, following the handover by Prof. Tonny Oyana, whose leadership of the college spanned more than eight years. The transition came as the university continued the process of appointing a substantive principal.

Speaking during the handover ceremony, Dr. Nabende said he was honoured to take on the responsibility and committed to building on the achievements realized during Oyana's tenure. He noted that while the college faces several challenges, it also has significant opportunities that can be leveraged to drive further growth and development. He praised Oyana for laying a strong foundation in academic excellence, research, partnerships, infrastructure development and institutional collaboration.

Nabende highlighted the college's seed-grant initiatives as a key achievement that has strengthened research and innovation, adding that efforts should be made to increase their impact. He also pledged to sustain the college's strong academic culture and maintain systems that are already delivering results. "I am fortunate that at least when I step in there is a reference to look at and continue with," he said.

> *"I am fortunate that at least when I step in there is a reference to look at and continue with,"*
>
> Dr. Peter Nabende

Representing the Vice Chancellor, Deputy Vice Chancellor for Finance and Administration Prof. Henry Alinaitwe commended Oyana's leadership and urged Nabende to build on the gains already made. "The bar is high, so don't lower it down," he said, calling for continuity and a smooth transition free from internal divisions.

Chief Human Resource Officer Mr. Tayari Mujuni credited Oyana with strengthening staff capacity, increasing the number of PhD holders and professors, and mentoring employees in their professional growth. He encouraged the college community to preserve and continue benefiting from Oyana's institutional knowledge.

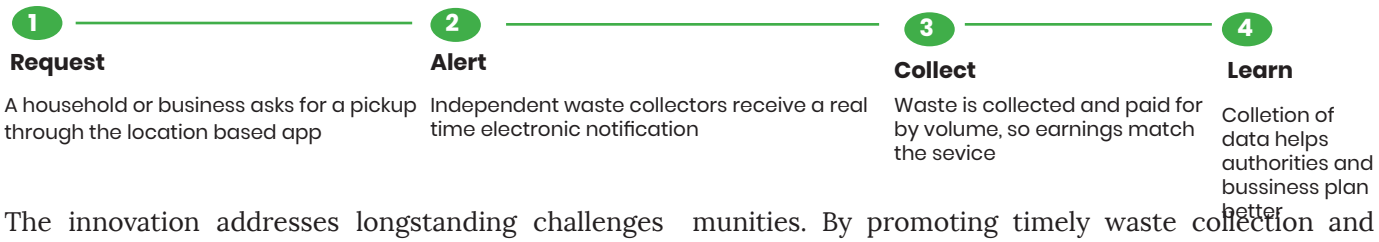
The Internal Audit office urged the new administration to strengthen accountability, compliance and internal controls while aligning college operations with the university's strategic plan.

In his farewell remarks, Oyana thanked university management, staff and students for their support, emphasizing that the college's achievements were the result of teamwork and collective effort. The transition marks the end of a significant leadership era at CoCIS while opening a new chapter focused on consolidating past achievements and addressing emerging institutional priorities.

• Research impact 2

Yo-Waste revolutionizes urban waste management through on-demand digital collection services

Yo-Waste, startup innovation that orignated from a classroom at College of Computing and Information Sciences at Makerere University, is transforming waste management through a location-based mobile application that connects households and businesses with independent waste collection agents, making rubbish collection more efficient, accessible, and affordable. By digitizing the waste collection process, the platform enables users to request services on demand while allowing waste collectors to receive real-time electronic notifications whenever collection services are needed



The innovation addresses longstanding challenges associated with waste disposal, including delayed collection, inefficient coordination, and limited access to reliable waste management services. Through its technology-driven approach, Yo Waste streamlines communication between waste generators and collectors, reducing operational inefficiencies and improving service delivery across communities.

A key feature of the platform is its pay-per-volume model, which ensures transparent and fair compensation based on the actual amount of waste collected. This model not only increases accountability but also creates economic opportunities for independent waste collectors by linking earnings directly to services rendered.

The platform has demonstrated significant social and environmental impact, serving more than 10,000 clients while contributing to cleaner and healthier communities. By promoting timely waste collection and proper disposal practices, Yo Waste helps reduce environmental pollution and supports efforts toward sustainable urban development.

Beyond service delivery, the technology generates valuable data that can be used to monitor waste management trends and inform evidence-based decision-making. Municipal authorities, businesses, and waste management stakeholders can leverage this information to improve planning, resource allocation, and environmental management strategies.

Through its innovative use of mobile technology, Yo-Waste is reshaping the waste management ecosystem by creating a more connected, data-driven, and efficient system that benefits households, businesses, waste collectors, and local governments. The platform stands as a successful example of how digital innovation can address urban challenges while delivering measurable social, economic, and environmental benefits.

• Research impact 3

Mobi Fuel expands access to credit and digital fuel services for underserved communities

Born out of the College of Computing and Information Sciences, Mobi Fuel is an innovative digital platform that improves fuel access for micro-consumers by addressing one of the sector's biggest challenges: providing fuel on credit while effectively tracking individual consumption. Designed to support small-scale fuel users, the solution leverages digital technology to enhance accountability, convenience, and financial inclusion among communities that depend on fuel for their livelihoods.

1 **Boda boda operators**

Mobi Fuel is first developed for boda boda operators who need fuel on credit

2 **Fishing communities**

Uptake grows strongest along the shares of Lake Victoria

3 **USSD access**

The app evolves into USSD service for users without a smartphone or internet.

Initially developed for boda boda operators, the platform found even greater uptake among fishing communities operating along the shores of Lake Victoria, where access to fuel is essential for daily economic activities. Recognizing the technology limitations faced by many users, Mobi Fuel evolved from a smartphone-based application to a USSD-enabled system, making the service accessible to individuals without smartphones or reliable internet connectivity.

The platform integrates mobile money payments, enabling users to purchase fuel, make payments remotely, and access fuel services with greater flexibility. This reduces the need for cash transactions and improves operational efficiency for both fuel suppliers and consumers. By digitizing fuel credit and payment processes, Mobi Fuel helps fuel dealers monitor usage, manage customer credit, and reduce record-keeping challenges.

The technology has made a significant contribution to financial inclusion by extending structured fuel-credit services to population groups that are often underserved by conventional financial systems. For fishermen and other small-scale entrepreneurs, the platform provides reliable access to fuel, enabling them to sustain their businesses and improve productivity even when immediate cash resources are limited.

Beyond improving access to fuel, Mobi Fuel demonstrates how locally developed digital solutions can address real-world challenges in underserved communities. By combining mobile money, USSD technology, and digital tracking systems, the innovation promotes efficiency, transparency, and economic resilience among micro-business operators.

Through its user-centered design and adaptability to local contexts, Mobi Fuel is helping transform fuel distribution and credit management, creating a more inclusive and accessible energy ecosystem for communities that rely on fuel-driven livelihoods.

What the platform brings together

- Mobile money payments, including remote payment
- Digital tracking of individual fuel consumption
- Credit management and record keeping for fuel dealers



New Computer Science head calls for more staff and resources to strengthen practical training

Dr. Marriette Atuhurire Katarahweire, the new Head of the Department of Computer Science, has called for increased staffing, equipment and support for students as the department moves toward more competence-based and practical training.

Atuhurire says her immediate priority is to consolidate the foundation laid by her predecessor, Prof. Engineer Bainomugisha, while improving student completion rates, strengthening research in artificial intelligence and digital security, and ensuring undergraduate students acquire practical programming skills.

She also identified financial constraints among self-sponsored graduate students as one of the factors contributing to delayed completion, saying many students struggle to balance employment, tuition and research.

In this interview, Atuhurire discusses her motivation for taking up leadership, her priorities for the department, challenges facing graduate students, the need for more staff and equipment, and her advocacy for girls in science, technology, engineering and mathematics (STEM).



What gave you the courage to become one of the leaders in the college? What motivated you?

I think it was the urge to lead and also the mentorship I received, especially from Prof. Engineer Bainomugisha when he was our head. There was that mentorship and, of course, the need to lead to step in and fill the gap when there is a need.

I have also seen leaders being able to make it, so I thought I should also give it a shot and serve the community

You have talked about mentorship. Who are some of the people who mentored and inspired you to get involved in leadership?

I was mentored by Prof. Bainomugisha. He has continued to offer me mentorship, especially when I stepped in as acting head of department.

We also have some ladies who have been in this college and school who have led by example and inspired us. One of them is Prof. Rwashana. She was a deputy principal, but even before that, she had served in different leadership positions. They inspired me to take on leadership.

So far, how is the office?

The office is busy. You have leadership roles, but you also have time that you need to go to class and teach. So it is busy, but I rise to the challenge.

It is about time management and making sure that I balance everything because I also have a family to take care of. So it is a matter of balancing everything, and of course, God first.

As the new head of department, what are your key priorities? What direction do you want to steer the department?

I am building on the foundation that has already been laid by a very able leader, Prof. Engineer Bainomugisha. I am stepping into very big shoes.

At the moment, I want to consolidate what is already there and make sure it keeps going. But, of course, I want to ensure that students continue and complete within the timeframe they have been given.

For the master's students, if we can support them and

ensure that they complete within the given time, that is important. The same applies to PhD students.

There is also an emphasis on research. We have been leading in artificial intelligence, but we also need to push for security because that is another area we should focus on—artificial intelligence and digital security.

For our undergraduates, we need to ensure that they are grounded not just in theory but also in practical skills, especially programming

Student completion has been a persistent challenge at Makerere University. What do you think are some of the bottlenecks behind the problem in the department and college?

For graduate students, most of them are self-sponsored or private students. That becomes a challenge.

If you have to work and also look for money to pay for your studies, it becomes difficult to balance the two. Mostly, when they finish their coursework and it is time for research, they say, "Let me go and find that money." Then it becomes a challenge to bring them back.

But I commend the staff because they are able to follow up with students for a whole year until they complete.

Sometimes a student says, "I am looking for money," and then they take on extra services. Others apply and start with the hope that they will get a scholarship, but the scholarships do not come.

There are also requirements. You need admission to get a scholarship, and you must be a student.

We commend the different organisations that have stepped in and given scholarships. We have Google DeepMind, which has just given scholarships to three master's students. We also have the Mastercard Foundation supporting master's and graduate students.

But staff also need to be motivated and supported. When you push a student until they graduate, sometimes you may not get a publication from that work. But pushing the student to graduation is also an achievement.

So staff also need to be remunerated and motivated.

Who is Dr. Marriette outside the office—not as a lecturer or head of department?

Marritte is a mother, a mother of four—three boys and one precious girl. I have been married for more than 16 years.

I am a Rotarian and a former president of the Rotary Club of Namugongo. I love serving the community, giving talks to people and encouraging young children, especially young girls, to join STEM.

When growing up, you would say, "I want to be an engineer," and people would laugh at you when you claimed you wanted to be an engineer who climbs poles. You would look at an electric pole and ask yourself, "How will I climb that pole?" Then you pull back.

But once we get into the field, we also see challenges with our students, especially girls. They are told that programming is hard and so on. I feel strongly about encouraging young girls and telling them that nothing is impossible. If other people can do it, then we can also do it.

I also love reading. I read a variety of books, both fiction and non-fiction. I am a Christian Catholic.

> I feel strongly about encouraging young girls and telling them that nothing is impossible
> Dr. Marriette Atuhurire Katarahweire

Is there any other information you would like to share with your colleagues, the university or government?

: For our colleagues, let us work together. The Department of Computer Science is a small unit, so we have been working together, helping each other and supporting one another.

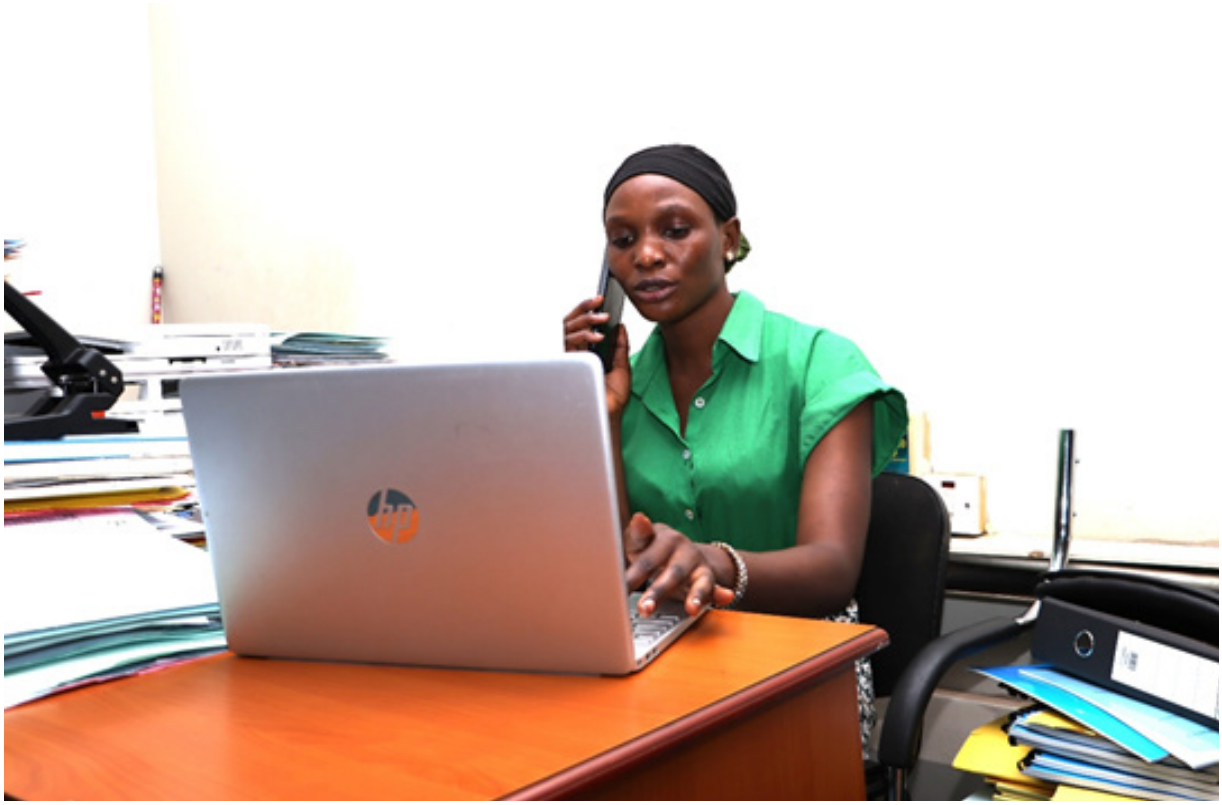
But I also request the university to recruit more staff. We are moving towards competence-based training, and this really needs more hands-on training.

We therefore need not only staff but also resources and equipment to equip the laboratories.

Most staff have gadgets that were donated or acquired through projects. When the project ends, they may continue using the same equipment for many years.

So my call to the university is to support staff with equipment, but also support the students.

I also think the government-sponsored places for students are very few. There is the loan scheme and other interventions, but I think they also need to think about expanding support for students.



Makerere internship builds confidence and workplace skills for YMCA student

For Namuddu Christine, an internship at Makerere University has transformed classroom knowledge into practical workplace skills, while helping her overcome a fear of communicating with people.

The Secretarial and Administrative Studies diploma student at YMCA Comprehensive Institute began her internship at Makerere University's College of Computing and Information Sciences on September 10, 2026. She is expected to complete the placement on October 30.

During the internship, Namuddu has taken on tasks including scanning, photocopying, printing, sending emails, writing minutes, filing documents and communicating with staff from different departments.

"I have gained more experience in my internship because I have experienced more things in terms of scanning, photocopying, email, sending and communication with different people," she said.

The experience has also improved her confidence. Namuddu said she initially feared communicating with people at the university, but the daily interaction required by her work has gradually helped her overcome that challenge.

> *At first, I feared to communicate with people, but now I can communicate with different people face-to-face without fearing them*
>
> Namuddu Christine

"At first, I feared to communicate with people, but now I can communicate with different people face-to-face without fearing them," she said.

Namuddu said the practical work at Makerere has complemented the theoretical training she received at YMCA Comprehensive Institute, particularly in computer skills and typing.

She said the internship has given her an opportunity to apply what she learned in class while acquiring ad-

ditional workplace skills that cannot be fully developed through classroom instruction.

Her experience, however, has also exposed the financial challenges students can face when undertaking internships far from home.

Namuddu travels from Kawala to Makerere University and said transport costs have been a major challenge, costing her about Shs6,000 every day.

She wants training institutions to consider partnerships that could help students secure internship placements closer to where they live.

"I advise YMCA to put adverts to Makerere University for such students who are looking for internships, such that they can open up opportunities for other students who don't have connections," she said.

She also proposed that YMCA and Makerere establish a formal partnership that could provide internship opportunities for several YMCA students each year.

At a glance

- Placement: 10 September to 30 October 2026
- Studies: Diploma in Secretarial and Administrative Studies, YMCA Comprehensive Institute
- Daily transport: about Shs 6,000 from Kawala
- Ambition: a Makerere degree in Computer Science

Namuddu secured her placement through a friend who helped her apply at Makerere. She said such informal connections can determine whether students get access to internship opportunities, leaving those without contacts at a disadvantage.

"Connection matters," she said, explaining that a friend introduced her to the opportunity.

For Namuddu, the internship is also part of a longer educational journey. After completing her primary education at Genesis Primary School in Nakaseke and secondary education at Mpigi Mixed Secondary School and Namugoona Parents School, she joined YMCA Comprehensive Institute for a diploma in Secretarial and Administrative Studies.

She said she chose the diploma route after obtaining points that did not allow her to pursue her preferred university course immediately. Her long-term ambition is to pursue a degree at Makerere University, where she hopes to study Computer Science.

She credits her supervisors at Makerere for helping her develop both technical and interpersonal skills. She specifically thanked Madam Pearl Aturinda for training her in tasks including minute writing, filing, photocopying and scanning, as well as communication and telephone etiquette.

She also acknowledged her YMCA supervisor, Mr Kisembo Nicholas Byenkya, for visiting Makerere to assess her progress.

As she prepares to complete the internship, Namuddu said she would encourage other students to seek opportunities at Makerere because of the practical exposure and experience she has gained.

For her, the value of the internship goes beyond completing a course requirement. It has provided an opportunity to translate classroom theory into workplace practice, build confidence in dealing with people and develop skills she expects to carry into her future career.



Health and AI

Taking the Ivory Tower to the communities: AI Microscopy project expands community-based disease screening in Uganda



Ocular - an AI-enabled microscopy project under the MakAI Health Lab is developing low-cost technologies to expand disease screening and health surveillance at community and primary healthcare level in Uganda. Ocular uses smartphones, artificial intelligence and standard laboratory equipment to automate and standardize the screening of diseases including malaria, cervical cancer and tuberculosis.

One of the project's key innovations is a 3D-printed adapter that allows smartphones to be mounted onto optical microscopes already available at public health facilities. The technology is intended to reduce the need for specialized equipment while enabling laboratories to digitally capture and analyze microscope images.

The project has also developed a malaria diagnostic application that analyzes smartphone images of blood smears to identify and count malaria parasites and white blood cells in less than a minute. The system is designed as a decision-support tool, with artificial intelligence highlighting possible findings while laboratory technicians confirm the results.

Researchers are also applying the microscopy platform to cervical cancer screening by developing machine-learning models trained on digital Pap smear images. The same technology is being adapted to examine stool and sputum samples for tuberculosis and intestinal parasites.

Beyond diagnosis, the project is integrating screening data into Uganda's Health Management Information Systems and testing models that combine health data with environmental indicators such as rainfall, temperature and bed-net coverage. The aim is to identify patterns that could provide early warning of disease outbreaks.

In addition, the initiative is testing multilingual chatbots to provide communities with information on malaria prevention, symptoms and treatment, while digitized microscopy images are being used to develop training tools for laboratory technicians.

The project's initiatives are aimed at moving diagnostic technologies beyond specialized laboratories and closer to communities, while improving the speed, standardization and availability of health screening.

Mak AI-Health Lab assesses Ocular AI diagnostic tools at health facilities across Uganda

The Mak AI-Health Lab conducted follow-up visits to health facilities across Uganda to assess the usability of its Ocular AI-assisted diagnostic tools after training laboratory technicians and clinicians in their use.



Oculars Jane Nalunga demonstrates how malaria diagnosis app works to health workers in Northern Uganda

Between July and August 2026, the Ocular project team visited health facilities in Western, Southern, Central and Northern Uganda to observe how health workers use the technology in routine clinical and laboratory workflows.

The follow-up was guided by a central question: whether the diagnostic tools can work effectively in the hands of the health workers expected to use them.

Across the regions, 18 health facilities and 76 health professionals provided feedback, with reported usability scores above 74 percent.

In Western Uganda, the team visited Mbarara Referral Hospital, Kambuga District Hospital, Kihihi Health Centre IV, Matanda and Ruhoko Health Centre IV in Ibanda. The team observed clinical workflows and consulted health workers on the practical requirements for adopting the technology.

In Southern Uganda, visits covered Buwenge Health Centre IV, Nakaseke General Hospital, Komamboga Health Centre IV, Semuto Health Centre IV and Walukuba Health Centre IV.

In Northern Uganda, the team visited Arua Regional Referral Hospital, Omugo Health Centre IV, BidiBidi Health Centre IV and Kuliklinga Health Centre III.

During the visits, researchers assessed how the tools fit into existing workflows and gathered feedback from clinicians and laboratory personnel on the challenges and requirements for wider adoption. The field assessments are intended to provide evidence on the usability and practical deployment of AI-assisted diagnostic technologies in health facilities outside major urban centres.

On the ground Follow-up visits, July to August 2026













Mak AI Health Lab takes homegrown diagnostic AI tools to global and national platforms







Dr. Rose Nakasi and JICA team in the Mak AI Health lab

The Makerere AI Health Lab stepped up engagement with international development partners and technology leaders to advance the use of artificial intelligence in disease diagnosis and health systems in Uganda.

The Lab recently engaged with the Japan International Cooperation Agency (JICA), participated in the Medical Artificial Intelligence Conference (MAIC) 2026 in Chongqing, China, and presented its Ocular project at the CIO-CXO Digital Leadership Forum's monthly CIO Roundtable in Kampala.

During JICA's visit to the Lab in Kampala, the team was taken through Ocular, an AI-enabled diagnostic platform designed to support malaria, tuberculosis and cervical cancer screening in low-resource settings.

The presentation, led by the Lab's team lead, Rose Nakasi, PhD, focused on how the technology uses existing health infrastructure to make AI-assisted diagnosis more accessible.

The engagement comes as JICA continues to support technology development in Uganda through skills development and technology transfer.

International exposure for the Lab also extended to China, where Dr. Nakasi represented the Makerere AI Health Lab at MAIC 2026 in Chongqing.

She presented a paper titled "Advancing Practical and Responsible AI for Health in Resource-Limited Settings: A Case for Disease Diagnostics," focusing on the application of AI in health systems with limited resources.

The conference brought together international experts working on medical artificial intelligence and AI-enabled diagnostics. Nakasi also visited Chongqing University's Fuling Hospital, where she observed AI systems being applied in rural primary healthcare.

Back in Uganda, Nakasi presented Ocular at the CIO-CXO Digital Leadership Forum's monthly CIO Roundtable, held at the Ministry of ICT and National Guidance in Kampala, under the theme "Turning AI into Enterprise Value."

The presentation demonstrated Ocular's offline-capable diagnostic functions for malaria, tuberculosis and cervical cancer screening at the point of care.

Beyond diagnosis, the Lab highlighted other applications of the platform, including AI-assisted microscopy for training healthcare professionals, integration of disease surveillance data to support health policy, and natural language processing tools designed to communicate health information and diagnostic results in local languages.

The engagements come as the Makerere AI Health Lab seeks to position locally developed artificial intelligence tools within Uganda's health system while building partnerships around the development and adoption of AI-driven healthcare technologies.

• Students and funding

Expanding graduate education and research: COCIS Awards 34 Fellowships to MSc and PhD students

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In alignment with Makerere University's strategic plan, COCIS is expanding access to postgraduate education and research by strengthening its capacity to attract research grants, scholarships and strategic funding partnerships. Through initiatives including AI4D, Data Science without Borders, Google and Google DeepMind, the college is creating opportunities for advanced study while mobilising resources for research and innovation in artificial intelligence, data science and related fields.

The funding is supporting a growing research portfolio focused on pressing challenges in Uganda and other low-resource settings, including healthcare, public health, agriculture, climate and environmental monitoring, language technologies, digital inclusion and disease diagnosis. The research spans Master's, PhD and postdoctoral programmes and brings together expertise across computing, engineering, public health, health informatics and geoinformation science, reinforcing COCIS's role in translating advanced technology and research into locally relevant solutions.

Beyond scholarship provision, the initiatives are strengthening COCIS's research and innovation ecosystem by connecting postgraduate training with competitive funding, multidisciplinary supervision and applied research. The emerging portfolio includes work on artificial intelligence for healthcare, African language technologies, environmental monitoring, agricultural forecasting, assistive technologies and other development challenges, demonstrating how strategic partnerships and grant-supported research can simultaneously expand higher education opportunities and accelerate innovation.

AI4D Master's Awardees 2024/2025- 6 Fellows

Name	Supervisors	Research Title
Gloria Nankoma	Dr. Joyce Nakatumba-Nabende	Predicting Synergistic Anti fungal Combinations for Candida Albicans using Machine Learning.
Patrick Anaku	Prof. Engineer Bainomugisha and Dr. Edwin Mugume	Mapping Brick Kilns Using Semantic Segmentation of Multi-Modal Satellite Imagery
Khadija Athman	Dr. Rose Nakibuule Dr. Peter Nabende	Using Deep Learning for pneumonia Detection Based on Ultrasound Data
Kyagaba Jonah Mubuuke	Dr. Ntanda Moses & Dr.Rose Nakibuule	Benchmarking medical Visual Question Answering models for Chest X-Ray Interpretation with scene graph knowledge
Linda Kellen Ayebale	Dr.Florence N Kivunike Dr.Haleem Chongomweru	Multimodal Vision–Language Modelling for Tuberculosis Screening in Uganda Using Chest X-rays and Clinical Metadata
Joan Deborah Nalikka	Dr. Joyce Nakatumba-Nabende & Dr. Halimu Chongomweru	Direct Speech to Speech translation for mental health support. (English -Luganda)

AI4D PhD Awardees 2024/2025 3 Fellows

Name	Supervisors	Research Title
Sulaiman Kagumire	Dr. Joyce Nakatumba-Nabende &Dr. Peter Nabende	Program: PhD in Computer Science Automatic Speech Recognition for Luganda Conversational Speech
Wayne Steven Okello	Dr. Andrew Katumba Dr. Edwin Mugume	Programme: Ph.D. in Engineering An AI-Driven Environmental Monitoring and Early Warning Platform for Low-Resource Settings.
Pius K.B. Mugagga	Prof. Engineer Bainomugisha	Embodied AI Architectural Prior: A Self-Organizing Framework for Unsupervised Multimodal Fusion and Representation

Data Science without Borders (DSWB) PhD Scholars – 2024/25

Name	Programme and Working research title
Brenda Birungi Bashemere	Program: PhD in Computer Science Research: A deep learning model for segmenting and predicting post-stroke epilepsy.
Suzan Nakasendwa	Program: PhD in Public Health Research: A data driven modeling of Stroke types classification and prediction of survival outcomes

AI4D PostDoc Scholars 2024/25

Dr. Lillian Muyama

Research: Investigating bias in LLM-driven clinical decision-making

My academic and research journey has been driven by a desire to harness technology for societal benefit. Previously, as a data scientist, I worked on AI-driven initiatives to improve air quality in Uganda. Currently, my research focuses on leveraging AI to support clinical decision-making. During my doctoral studies, I applied a range of AI techniques to develop data-driven, personalized clinical pathways for patients. As part of my postdoctoral project under the AI4D fellowship, I will be investigating bias in large language model-driven clinical decision-making and exploring potential strategies to mitigate these biases.

Cohort (2026/2027 Cohort)

Student	Supervisor(s)	Funding	Proposed Topic(s)	Program
Master's Fellows				
Henry Ssenono	Dr. Joyce N. Nabende + Dr. Lillian Muyama	Google	Domain-Stratified Safety Evaluation of LLMs on Amplify Data	Computer Science
Charles Ssuuna	Dr. Joyce N. Nabende + Dr. Lillian Muyama	Google	Investigating bias and developing mitigation strategies for LLMs in healthcare tasks - Charles	Computer Science

Student	Supervisor(s)	Funding	Proposed Topic(s)	Program
Faith Taremwa	Dr. Joyce Nabende + Dr. Lillian Muyama	Google DeepMind	Explainable AI Model to Distinguish Drug-Resistant from Drug-Sensitive Tuberculosis using Chest X-rays	Computer Science
Solome Nakazzi	Dr. Lillian Muyama + Dr. Cornelius Kalenzi	Google DeepMind	Predicting tuberculosis recurrence among people living with HIV in Uganda using machine learning	Computer Science
Jovita Nagawa	Dr. Joyce Nabende	Google	Development of an AI-Powered Luganda-to-English Audio Transcription and Translation System for Health Research at Rakai Health Sciences Program (RHSP)	Bioinformatics
Husuna Nabirye	Dr. Moses Ntanda	AI4D	Development and validation of a natural language processing system for automated identification of suspected adverse drug reactions from routine HIV clinical data in Uganda	Clinical Epidemiology and Biostatistics
Deus Tumusiime	Dr. Rahman Sanya + Dr. Joyce N. Nabende	AI4D	Beyond the line of sight: counterfactual amodal anchors for occlusion-aware multi-animal tracking in UAV-based precision livestock monitoring	Computer Science
Buyungo Jesse	Dr. Rose Nakibuule	AI4D	Machine learning reconstruction of cloud-contaminated Sentinel-2 NDVI time series using Sentinel-1 SAR for monitoring maize phenology in Central Uganda	Geoinformation Science and Technology
Joel Ssematimba	Prof. Engineer Bainomugisha + Dr. Lillian Muyama	AI4D	Efficient battery runtime prediction using lightweight machine learning models on 8-bit microcontrollers for low-power IoT air quality monitoring systems	Computer Science
Bosco Lebuga	Dr. Daudi Jjingo, Dr. Marvin Ggaliwango	AI4D	Interpretable & lightweight attention-Based deep learning for HIV-1 subtype classification in recombinant-rich Ugandan viral genomes	Computer Science
Angella Nakato	Dr. Peter Nabende	AI4D	Forecasting epilepsy presentations during heat-stress seasons in Uganda	Health Informatics
Gilbert Nyakana	Dr. Rose Nakibuule + Dr. Florence Kivunike	Google	Herbal Medicine translation using LLMs-(indigenous medical knowledge generation)	Computer Science
Stephen Odi		Google DeepMind		Computer Science
Shamsa Masaba		Google DeepMind		Computer Science
Christine Kikome		Google DeepMind		Computer Science

PhD Fellows

Student	Supervisor(s)	Funding	Proposed Topic(s)	Program
Janet Lynn Tar Gutu	Dr. Joyce N. Nabende	Google	Building Uganda's First Open-Source Sign Language Dataset and AI Translation System for Multilingual Digital Inclusion	Computer Science
Kateregga Michael	Dr. Lillian Muyama	AI4D	Development and Validation of Explainable Multimodal Machine Learning Models for Early Prediction of Hypertension Among People Living with HIV in the Rakai	Public Health
Patience Atukunda	Dr. Joyce N. Nabende + Prof. Rhoda + Prof. Ida-Maria	AI4D	Building Artificial Intelligence Models for Breast Cancer Diagnosis Using Risk Factors, Ultrasound and Cytology Data	Public Health
Ritah Nafuna	Dr. Peter Nabende + Dr. Moses Ntanda	Google	Modelling and prediction of rainfall distribution for optimum planting season in Northern Uganda Using Stacking Transformers.	Computer Science
Abigail Oppong	Dr. Joyce N. Nabende	Google	Developing Speech and Language Models for Integrating Low-Resourced African Languages in Assistive Rehabilitation Technologies	Computer Science
Muhanguzi Tibabwetiza	Dr. Joyce N. Nabende + Prof. Engineer Bainomugisha	AI4D	Edge-Optimized Multi-Modal Machine Learning for Urban Sensing	Computer Science
Immaculate Kamusiime	Prof. Engineer Bainomugisha and Dr. Joyce N. Nabende	Google	Spatiotemporal Physics-Informed Machine Learning (PINN) Model for Local and Micro-Scale Weather Forecasting in Data-Scarce Region	Computer Science



Students and funding

CoCIS Endowment Fund for the economically disadvantaged but bright students

The CoCIS Endowment Fund for economically disadvantaged but bright students was officially launched in August 2025 during a staff retreat held at the Source of the Nile Hotel in Jinja from 14th–16th August 2025. The retreat was held under the theme "Providing Incredible Opportunities for Research and Students."

USD 15,000
awarded every year

18
scholarships across four categories

3.6
minimum GPA to keep the award



The primary goal of the fund is to provide financial support to academically bright students from economically disadvantaged backgrounds who face challenges meeting the cost of higher education. The fund seeks to enable such students to remain in school, complete their studies, realize their potential, and contribute to society and the strategic objectives of Makerere University. It also aims to support outstanding and early-career faculty research.

The scholarship targets CoCIS undergraduate students with demonstrated financial need and strong academic performance. Students in standard programmes are considered in their second or third year, while Software Engineering students are considered in their third or fourth year. Beneficiaries are required to maintain a minimum GPA of 3.6 throughout the sponsorship period.

Awards are made through a transparent selection process guided by established criteria and overseen by a Board of Trustees comprising College representatives, student leadership, community, and industry representatives. The fund provides USD 15,000 annually, distributed across four scholarship categories.

The beneficiaries are drawn from programmes including Computer Science, Software Engineering, Library and Information Science, and Information Systems and Technology. The inaugural 2025 awardees included:

The inaugural 2025 awardees

Category 1 USD2,000 One student

Byali Maqueline Leya, Bachelor of Science in Software Engineering

Category 2 USD 1,500 Two students

Businge Pamela, Bachelor of Library & Information Science

Isingoma Edgar, Bachelor of Science in Computer Science

Category 3 USD 1,000 Five students

Ggayi Edward, Bachelor of Science in Computer Science
Katende Herman, Bachelor of Science in Computer Science
Najjuko Edith, Bachelor of Library & Information Science
Nakatinda Ruth, Bachelor of Library & Information Science
Walukagga Sudais, Bachelor of Information Systems &Technology

Category 4 USD 500 Ten students

Nakabaale Benjamin, Bachelor of Science in Computer Science
Kemigisha Daphine, Bachelor of Library & Information Science
Lutalo Allan, Bachelor of Science in Software Engineering
Namaganda Sandra, Bachelor of Information Systems &Technology
Nankunda Lillian, Bachelor of Science in Software Engineering
Nansubuga Catherine, Bachelor of Information Systems & Technology
Okwir Moses, Bachelor of Information Systems & Technology
Owori Boniface, Bachelor of Library & Information Science
Ssenkungu Joseph, Bachelor of Information Systems & Technology
Sukwe Benjamin, Bachelor of Science in Computer Science

Pictorial of events

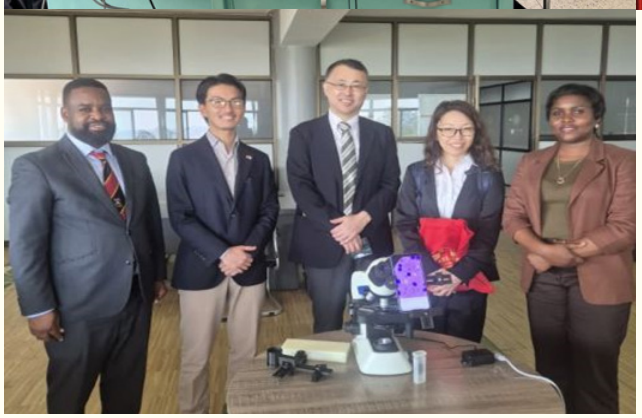













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