POST-DIGITAL - European Training Network on Post-Digital Computing [GA860360]

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EXECUTIVE SUMMARY

This deliverable report details the Scientific Research Output of Project POST-DIGITAL and dissemination measures taken in terms of peer-reviewed publications, conference papers and talks and event posters. The main aim of these dissemination activities is to present the project and its objectives and to make the research conducted both freely available and easily discoverable. Furthermore, this deliverable summarises the Public Engagement Activities the consortium has been completing, ranging from dedicated outreach activities lead by POST-DIGITAL's early stage researchers to the project's presence on social media platforms and research networks, as well as newsletters. The main aim of these public engagement activities is to inform stakeholders and make research conducted in POST-DIGITAL more accessible to all sectors of society. This report covers the first 2 years of the 4-year POST-DIGITAL European Training Network (EC GA 860360).

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1 CONTEXT OF THE POST-DIGITAL ETN

The European Training Network on Post-Digital Computing (POST-DIGITAL) is funded by the EC under Horizon2020 Marie Skłodowska-Curie ITN Action.

POST-DIGITAL has the ambition to create a new generation of scientific and industrial leaders that will greatly contribute to strengthening Europe's human resources and industry competitiveness in future digital and post digital economy and technology. The programme trains 15 high-calibre Early-Stage Researchers (ESRs) with different background and focuses on the investigation of new unconventional nature-inspired alternatives to the digital computing like photonic and neuromorphic computing. POST-DIGITAL ESRs benefit from rich interactions between academia and industry, from a comprehensive training programme featuring inter-sectorial and multidisciplinary technical courses, which is complemented by a bespoke transferable skills training throughout their PhD. This report details the Scientific Project Output for the initial 24 months of the project in form of peer reviewed publications, conference talks and invited contributions and other scientific communication. Furthermore, this report summarised the Public Engagement Activities undertaken by the consortium members during the initial 24 months of the project, in particular outreach activities and social media interactions and finally newsletters published by the consortium.

The project POST-DIGITAL's start on 1 April 2020 coincided with the spread of the coronavirus across Europe and the introduction of travel restrictions and lockdowns. This required a relevant adjustment of the planned activities, organising and attending online events and using social media and other online communication tools.

2 SCIENTIFIC PROJECT OUTPUT

During the first project year all 15 ESR have been successfully recruited and started their research and training activities. During the reporting period and especially in the second project year several dissemination activities were performed in order to present the POST-DIGITAL project and to promote its research activities and results to the scientific community.

All published research output is placed in local repositories and archives, such as Aston Research Explorer https://research.aston.ac.uk/, IFISC https://ifisc.uib-csic.es/media/publications, University of Groningen https://research.rug.nl, ULB https://difusion.ulb.ac.be/ UGent https://biblio.ugent.be/ and https://arxiv.org to increase its visibility and make it discoverable. POST-DIGITAL aims to have all its research output either gold or green Open Access by default.

2.1 PEER-REVIEWED JOURNAL PUBLICATIONS AND CONFERENCE PROCEEDINGS (NEWEST ON TOP)

2.1.1 **Apostolos Argyris**

Photonic neuromorphic technologies in optical communications

Nanophotonics (ahead of print), 2022. https://doi.org/10.1515/nanoph-2021-0578

2.1.2 **Irene Estébanez; Shi Li; Janek Schwind; Ingo Fischer; Stephan Pachnicke; Apostolos Argyris**

56 GBaud PAM-4 100 Km Transmission System With Photonic Processing Schemes

*Journal of Lightwave technology, Volume 40, Issue 1*https://doi.org/10.1109/JLT.2021.3117921

2.1.3 **Alessandro Lupo, Lorenz Butschek, and Serge Massar**
Photonic extreme learning machine based on frequency multiplexing,
Optics Express Volume 29, Issue 18, p. 28257-28276 (2021)
doi: 10.1364/OE.433535

2.1.4 **Benedikt Vettelschoss, André Röhm, Miguel C. Soriano**
Information Processing Capacity of a Single-Node Reservoir Computer: An Experimental Evaluation,
IEEE Transactions on Neural Networks and Learning Systems (2021) p. 1-12
doi: 10.1109/TNNLS.2021.3116709

2.1.5 **Lorenz Butschek, Akram Akrout, Evangelia Dimitriadou, Alessandro Lupo, Marc Haelterman, and Serge Massar**
Photonic reservoir computer based on frequency multiplexing,
Optics Letters , Vol. 47, Issue 4, pp. 782-785 (2022)
doi: https://doi.org/10.1364/OL.451087

2.1.6 **Alessandro Lupo and Serge Massar**
Parallel Extreme Learning Machines Based on Frequency Multiplexing,
Applied Sciences 12, no. 1: 214.
doi: https://doi.org/10.3390/app12010214

2.1.7 **Xavier Porte, Anas Skalli, Nasibeh Haghighi, Stephan Reitzenstein, James A Lott and Daniel Brunner**
A complete, parallel and autonomous photonic neural network in a semiconductor multimode laser,
Journal of Physics: Photonics, 29 April 2021
Doi: https://doi.org/10.1088/2515-7647/abf6bd

2.1.8 **Andreoli, L., Porte, X., Chrétien, S., Jacquot, M., Larger, L., & Brunner, D.**
Boolean learning under noise-perturbations in hardware neural networks,
Nanophotonics (published online ahead of print), 20200171.
doi: https://doi.org/10.1515/nanoph-2020-0171

2.2 PEER-REVIEWED CONFERENCE TALKS AND OTHER CONTRIBUTIONS

2.2.1 **A. Skalli**, X. Porte , N. Haghighi, S. Reitzenstein , J. A. Lott and D. Brunner
Oral presentation at International Symposium on Physics and applications of laser dynamics,
Title: "Link between physical properties and computational performance in a VCSEL – based artificial neural network"
online, 18 Nov 2021
For this paper Anas Skalli received the **Best Student Paper Award.**


IS-PALD 2021
International Symposium on Physics and Applications of Laser Dynamics 2021 (IS-PALD 2021)
Best Student Paper Award
This certificate is presented to
Anas Skalli
In recognition of the paper titled
Link between physical properties and computational performance in a VCSEL -based artificial neural network
November 18th, 2021
IS-PALD 2021 General Chair

Figure 1 Best Student Paper Award to Anas Skalli at IS-PALD 2021

2.2.2 **Anas Skalli,** Xavier Porte, Nasibeh Haghighi, Stephan Reitzenstein, James Lott, Daniel Brunner
Oral presentation at the workshop Deep Learning in Unconventional Neuromorphic Hardware DLUNH of the IJCNN 2021 conference
Title: "A complete, parallel, and autonomous photonic neural network in a semiconductor multimode laser".
Online, 23 July 2021

2.2.3 **Diego Arguello Ron,** Morteza Kamalian-Kopae and Sergei Turitsyn
Oral presentation at the workshop Deep Learning in Unconventional Neuromorphic Hardware DLUNH of the IJCNN 2021 conference
Title: Noise-Resistant Optical Implementation of Analogue Neural Networks
Online, 23 July 2021

2.2.4 **Mirko Goldmann**, Claudio R. Mirasso, Ingo Fischer, Miguel C. Soriano.
Oral presentation at the workshop Deep Learning in Unconventional Neuromorphic Hardware DLUNH of the IJCNN 2021 conference
Title: "Memory engineering using a reconfigurable deep reservoir architecture"
Online, 23 July 2021

2.2.5 **Alessandro Lupo**, Lorenz Butschek, Serge Massar
Oral presentation at ETAI 2021
Title: Frequency multiplexed optical extreme learning machine
Online 1-5 August 2021
For his presentation Alessandro Lupo received the **Best ESR presentation award**.

Figure 2 Best ESR presentation award to Alessandro Lupo at ETAI 2021

2.2.6 **Diego Arguello Ron**, Morteza Kamalian-Kopae, Sergei Turitsyn
Oral presentation at ETAI 2021

Title: Noise-Resistant Optical Implementation of Analogue Neural Networks
Online, 1-5 August 2021

2.2.7 Anas Skalli, J. Porte, Nasibeh Haghighi, Stephan Reitzenstein, James A. Lott, Daniel Brunner
Oral presentation at ETAI 2021
Title: A complete, parallel, and autonomous photonic neural network in a semiconductor multimode laser
Online, 1 August 2021

2.2.8 **Miguel C. Soriano,** Mirko Goldmann**,** Ingo Fischer,
Oral presentation at ETAI 2021
Title: Analog information processing with timemultiplexed optoelectronic systems
Online 1-5 August 2021

2.2.9 **Diego Arguello Ron**, Morteza Kamalian-Kopae, Sergei Turitsyn
Oral presentation and associated poster at the Conference on Lasers and Electro-Optics/Europe (CLEO Europe)
Title: Noise-Resistant Optical Implementation of Analogue Neural Networks
Online on 21-25 June 2021

2.2.10 **Mirko Goldmann,** Claudio R. Mirasso, Ingo Fischer and Miguel C. Soriano.
Oral presentation at The International Joint Conference on Neural Networks (IJCNN) 2021,
Title: Exploiting transient dynamics of a time-multiplexed reservoir to boost the system performance
Online, 18-22 July 2021

2.3 SCIENTIFIC POSTERS AT EVENTS (NOT PEER-REVIEWED)

Several posters about POST-DIGITAL research results have been presented at international conferences and workshops:

• Anas Skalli, ESR from UBFC presented for an audience of scientists and students a poster about his research within the POST-DIGITAL project at the UBFC poster competition in July 2021.

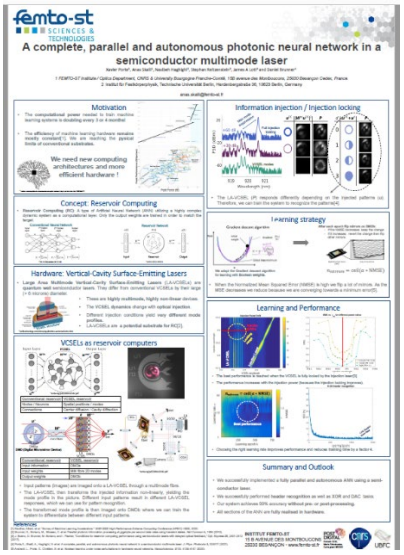

Figure 3 Anas Skalli at the UBFC poster competition 2021

- Daniel Hesslow, ESR from LightOn gave a presentation with the title "Photonic co-processors in HPC: using LightOn OPUs for Randomized Numerical Linear Algebra" with an associated poster session at Hotchips: 2021 .

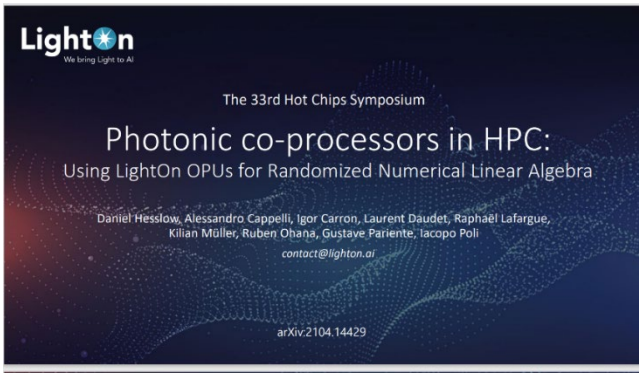

Figure 4 The presentation from Daniel Hesslow at Hotchips 2021

- Diego Arguello Ron, ESR from Aston University gave a poster session presentation on the topic "Experimental implementation of a neural network optical channel equalizer in restricted hardware using pruning and quantization", TOP Conference, 14-15 February 2022 in London.

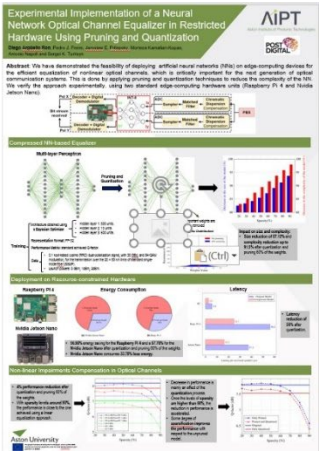

Figure 5 Diego Arguello Ron at TOP Conference 2022

2.4 SCIENTIFIC PAPERS (NOT PEER-REVIEWED)

Since joining the POST-DIGITAL team the ESRs have submitted several papers which are currently available on pre-publication servers like Arxiv and are openly accessible.

2.4.1 **Chatelain, Amélie; Djeghri, Amine; Hesslow, Daniel; Launay, Julien; Poli, Iacopo**
Is the Number of Trainable Parameters All That Actually Matters?
http://arxiv.org/abs/2109.11928

2.4.2 **Arguello, Diego R.; Freire, Pedro J.; Prilepsky, Jaroslaw E.; Napoli, Antonio; Kamalian-Kopae, Morteza; Turitsyn, Sergei K.**
Realization of Neural Network-based Optical Channel Equalizer in Restricted Hardware
http://arxiv.org/abs/2109.07204

2.4.3 **Butschek, Lorenz; Akrout, Akram; Dimitriadou, Evangelia; Haelterman, Marc; Massar, Serge**
Parallel photonic reservoir computing based on frequency multiplexing of neurons
http://arxiv.org/abs/2008.11247

2.4.4 **Anas Skalli, Joshua Robertson, Dafydd Owen-Newns, Matej Hejda, Xavier Porte, Stephan Reitzenstein, Antonio Hurtado, D. Brunner**
Photonic neuromorphic computing using vertical cavity semiconductor lasers
https://arxiv.org/abs/2112.08086

2.4.5 **Anas Skalli, Xavier Porte, Nasibeh Haghighi, Stephan Reitzenstein, James A. Lott, D. Brunner**
Computational metrics and parameters of an injection-locked large area semiconductor laser for neural network computing
https://arxiv.org/abs/2112.08947

2.4.6 **Charles Brossollet, Alessandro Cappelli, Igor Carron, Charidimos Chaintoutis, Amelie Chatelain, Laurent Daudet, Sylvain Gigan, Daniel Hesslow et al.**
LightOn Optical Processing Unit: Scaling-up AI and HPC with a Non von Neumann co-processor
https://arxiv.org/pdf/2107.11814v1.pdf

2.4.7 **Daniel Hesslow, Alessandro Cappelli, Igor Carron, Laurent Daudet et al.**
Photonic co-processors in HPC: using LightOn OPUs for Randomized Numerical Linear Algebra
https://arxiv.org/abs/2104.14429

2.4.8 **Daniel Hesslow & Iacopo Poli**
Contrastive Embeddings for Neural Architectures, https://arxiv.org/abs/2102.04208

2.4.9 **Mirko Goldmann, Claudio R. Mirasso, Ingo Fischer, Miguel C. Soriano**
Inferring untrained complex dynamics of delay systems using an adapted echo state network
https://arxiv.org/abs/2111.03706

2.4.10 **Diego R. Arguello, Pedro J. Freire, Jaroslaw E. Prilepsky, Antonio Napoli, Morteza Kamalian-Kopae, Sergei K. Turitsyn**
Experimental implementation of a neural network optical channel equalizer in restricted hardware using pruning and quantization
https://doi.org/10.48550/arXiv.2109.07204

2.5 Other Seminars, Talks and Memberships

All ESRs regularly present their progress and latest results at in-house seminars and team meetings at their local host and secondment institutions, e.g Benedikt Vettelschoss (UGent) gives regular presentations at *Unconventional computing* cluster meetings at IDLab-AIRO, UGent; Lucas Talandier gave a presentation on his Secondment work at IBM during a weekly group meeting at IFISC in March 2022; Anas Skalli (UBFC) gives presentations of research activities and shows the UBFC laboratories to first year bachelor students; Enrico Picco (ULB) regularly takes part in meetings with students (bachelor and master) at ULB discussing possible collaborations, side projects or even only for informative purposes.
The POST-DIGITAL ESRs have initiated a bi-weekly virtual POST-DIGITAL meeting where they present their work. In addition, ESRs like Long Nguyen (Aston), Sarah Masaad (IMEC) and Guillaume Pourcel (University of Groningen) are active in alumni associations where they share their experience with Bachelor and Master students. Diego Arguello Ron (Aston) is a member of the Transnet programme and covers the topic of Machine Learning applied to Optical Communication Systems. The Transnet programme is led by a world-renowned research team at the University College London (UCL) in collaboration with Aston University and University of Cambridge. The aim of the programme is to create an adaptive intelligent optical network that will form the backbone of the next generation digital infrastructure.

3 Public Engagement

Outreach and public engagement activities are meant to engage a large audience and to bring knowledge and expertise on a particular topic to the general public. The objective of outreach is to explain the benefits of research to a larger public, to promote research as a career choice, especially to the young audience. Engaging and communicating with the general public is also a way to better understand expectations, interests and concerns about science and technology.

3.1 OUTREACH ACTIVITIES DURING THE INITIAL 24 MONTHS OF THE PROJECT

3.1.1 Brochure International Day of Light 2021

For the celebration of the **International Day of Light on 16 May 2021** (IDL2021) AiPT initiated and created a special research brochure dedicated to light and the role it plays in science, culture and art, education, sustainable development, and in fields like medicine, communications, and energy.

The brochure focused on how light is being used to provide innovative technological solutions and included contributions ESRs from different projects coordinated by AiPT. The POST-DIGITAL ESRs Anas Skalli (UBFC), Elger Vlieg (IBM) and Long Hoang Nguyen (Aston) shared exciting insights in their research topics and how their work relates to the concept of «light».

3.1.2 International Day of Light 2021, summit

Another activity to mark the International Day of Light at Aston University was the organisation of a one-day summit on 21st of May 2021. Aston Institute of Photonic Technologies, OSA/SPIE Aston University Student Chapter and several MSCA Projects organised an academic and social event, which gave a unique opportunity to learn about the recent achievements of various research groups across AiPT, to cooperate with colleagues through academic and social activities, and to meet with former and current AiPT-ers to evoke memories and create new ones.

Figure 6 International Day of Light 2021 at AiPT- brochure and summit

3.1.3 POST-DIGITAL Newsletters

In order to inform the scientific community and the general public about the POST-DIGITAL project, its ESRs and their activities we are publishing a regular Newsletter with the contribution of the ESRs team. The Newsletters are uploaded on the project website. In the two issues, published in July 2021 and December 2021 we introduce the 15 POST-DIGITAL ESRs, the newest publications, training events, awards and recognitions received, secondments, conference presentations etc.

Figure 7 POST-DIGITAL Newsletters

3.1.4 POST-DIGITAL Brochure, all ESRs

The POST-DIGITAL ESRs with key organiser Mirko Goldmann from IFISC are preparing a brochure which aims to present the project and the ESRs to the general public and to inform non-experts about the project objectives and activities. The brochure will be published in two issues: the first issue has been published in March 2022 and the second one will be published in June 2022.

Figure 8 POST-DIGITAL brochure for the general public

3.1.5 Mirko Goldmann, IFISC at the Poster Week 2021 and 2022

In March 2021 and 2022 Mirko Goldmann from IFISC took part in the annual IFISC Poster Party. The IFISC Poster Party is an activity where PhD students and postdoctoral researchers present their research in a poster format. In 2021 and 2022 due to health restrictions for the Covid-19 pandemic, the Poster Party changed its format and was organised as a Poster Week and included videos from the PhD students explaining their work and the conclusions of their study. The video of Mirko Goldmann from 2021 on the topic "Deep Time-Delay Reservoir Computing: Dynamics and Memory Capacity "can be seen here. In 2022 Mirko Goldmann achieved 3th place in the field Nonlinear Photonics for his video presentation on the topic "Inferring untrained complex dynamics of delay systems using a physics-informed reservoir". The video can be seen here

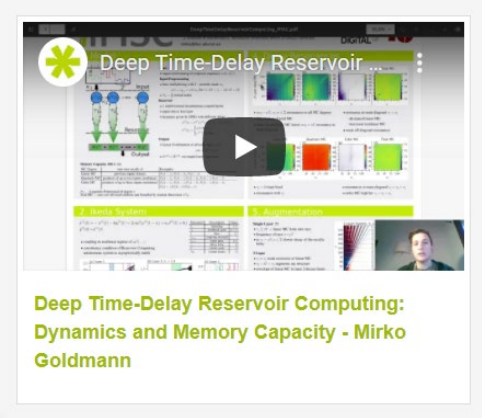

Figure 9 Mirko Goldmann, ESR at IFISC at the Poster Week 2021, IFISC

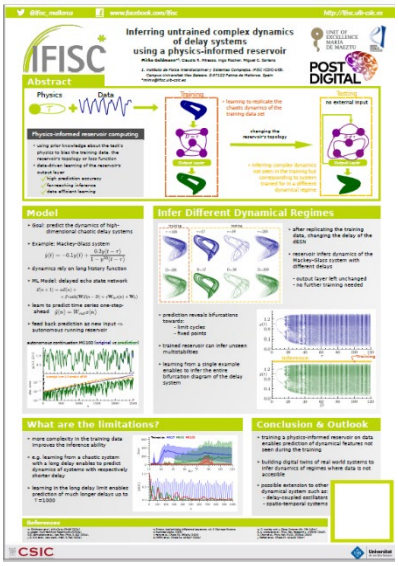

Figure 10 Mirko Goldmann's poster at the IFISC Poster Week 2022

3.1.6 Elger Vlieg (ESR15, IBM) at the Swiss National Future Day

On 11 September 2021 the POST-DIGITAL ESR Elger Vlieg took part in the Swiss National Future Day, an annual event whose goal is to introduce and promote different professions to primary school students. In the framework of this initiative IBM Research in Zurich invited school children aged 10-12 to visit their premises and Elger Vlieg was showing them around IBM explaining to the school children about what it is like to be a researcher.

3.1.7 Steven Abreu, co-president of the SciCom writing club at the University of Groningen

In July 2021 Steven Abreu, ESR at the University of Groningen co-founded a writing club for science communication at GOPHER (Groningen Organization for PhD Education and Recreation). The club organizes regular meetings for young researchers to talk about science communication and to write for a general scientific audience, it manages workshops, a buddy writing system, reviewing/editing process and publishing on the club's platform.

Figure 11 Steven Abreu with members of the writing club

3.1.8 Steven Abreu in the organising team of the Three Minute Thesis in Groningen

In 2021 Steven Abreu was part of the organising team for the Three Minute Thesis competition in Groningen. It is an international competition in which PhD students present their PhD thesis to the general public in just three minutes (anyone is welcome to attend the event, and the winning presentations are uploaded on YouTube). The competition in Groningen took place on March 9th, and winners will move on to the Europe-level round of the competition.

Figure 12 Three Minute Thesis feedback session in Groningen 2021

3.1.9 Long Nguyen, Aston and Sarah Masaad, IMEC on Erasmus Mundus student events

In March 2021 Long Nguyen, ESR at Aston University and Sarah Masaad, ESR at IMEC took part in the online Erasmus Mundus student sharing events organised by Aston University. On these events Sarah and Long shared their personal experience in PhD opportunities and next career steps for MSc students within the Erasmus Mundus programs at Aston University.

Figure 13 Long Nguyen and Sarah Masaad with other Smartnet and Pixnet alumni sharing their stories to MSc students

3.1.10 Steven Abreu, ESR at Groningen in the organisation of the PhD Day 2023

Steven Abreu is part of the organising team for the PhD Day in Groningen which will take part in spring 2023. The PhD Day at University of Groningen is an annual event for all PhD students from all fields and nationalities. The students aim to create a special day in which they can learn and develop academically and personally. The event includes a wide variety of activities, presentations & workshops related to doing a PhD, a career fair for positions both inside and outside academia and social events. As head of sponsorship Steven Abreu is responsible for the sponsorship team, contacting organisations that would support the event.

3.1.11 Steven Abreu, ESR at Groningen at the Career Day 2021

In November 2021 Steven Abreu was part of a panel of PhD students in a Career Day organised by the Faculty of Mathematics and Natural Sciences at the University of Groningen. On this event PhD students met and introduced themselves to MSc students and answered questions about research and life as a PhD student.

3.1.12 Steven Abreu, ESR at Groningen at the Speeddaters academia 2022

On 8 February 2022 Steven Abreu was participating in an event called "speeddaters academia" at the University of Groningen where each PhD student is paired up with honours students (mainly BSc students on a research-track), to talk about different research related topics.

3.1.13 Outreach to International Women in Engineering Day 2021

Engagement activities include not only POST-DIGITAL ESRs, but also their Project Manager. To celebrate International Women in Engineering Day (INWED21), the EC Project Managers team at AIPT have produced a poster showing the people behind its great projects. INWed21 is in its eighth year and took place on 23 June 2021. It is brought to us by the Women's Engineering Society.

Figure 14 Poster "Women in Engineering" by AiPT, 2021

3.2 SOCIAL MEDIA

POST-DIGITAL engages with an international audience via different social media feeds, such as twitter, LinkedIn, Instagram (a joint account for AiPT- coordinated projects) etc. The main tools to present the POST-DIGITAL project and its activities and to communicate them to the scientific community and the general public are Twitter and the project website.

Twitter

The POST-DIGITAL twitter account is currently followed by 214 photonics-related individuals, research groups and companies from 32 countries in 6 continents. Through regular tweets on news about the project, its consortium and activities POST-DIGITAL has worked tirelessly to build its follower base on twitter twitter.com/PostDigital_ETN. Among influential followers we count the Editor of Nature Photonics Dr Rachel Won (2.1K followers), the journal Machine Learning: Science and Technology (5K followers); several research labs, such as CEMES-CNRS (6.6K+ followers): IEEE EMC Society IE (4.5K followers), Photonics Online Meetup (POM) (3K followers); influential individuals such as Igor Carron from LightOn, Co-Organizer of the Paris Machine Learning Meetup and discussions among top specialists (5K followers), Alexandra Boltasseva, Professor of electrical and computer engineering at Purdue University and editor-in-chief for The Optical Society's Optical Materials Express journal (2.6k followers); commercial companies such as NKT Photonics A/S (1.5K followers) etc.

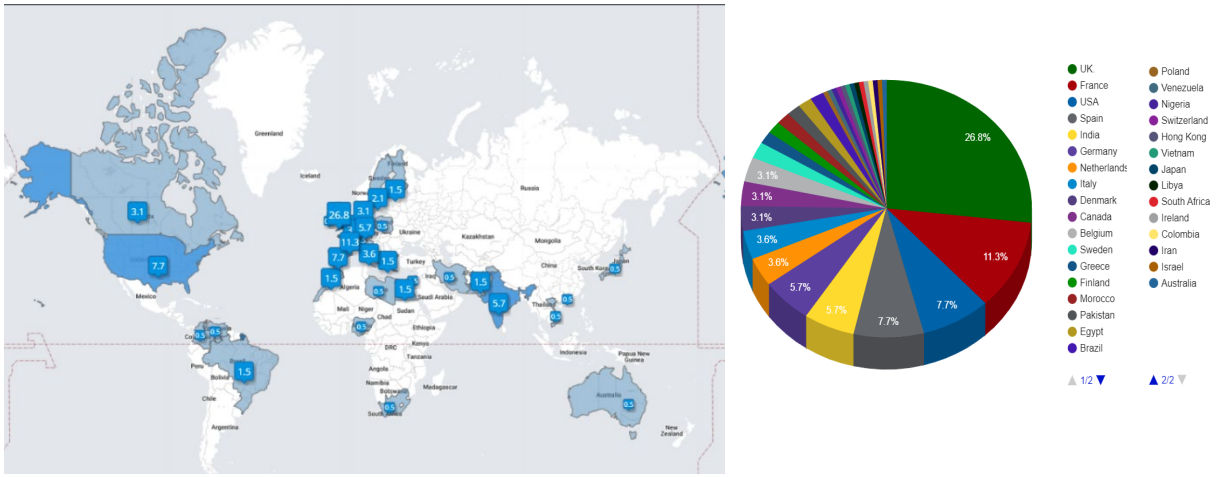

Figure 15 Geographic reach of POST-DIGITAL's Twitter feed

POST-DIGITAL members also tweet individually about their science output (among other topics):

- Coordinator Sergei Turitsyn: @im_sergei / https://twitter.com/im_sergei
- Daniel Brunner: @dbrunner_lab / https://twitter.com/dbrunner_lab
- David Domenech: @dominauta_vlc / https://twitter.com/dominauta_vlc
- Miguel Soriano: @miguelcsoriano / https://twitter.com/miguelcsoriano
- Joni Dambre: / @JoniDambre/ https://twitter.com/JoniDambre
- Claudio Mirasso: @claudioMirasso / https://twitter.com/claudioMirasso
- Laurent Daudet: @Laurent_Daudet / https://twitter.com/Laurent_Daudet
- Ingo Fischer: @nlphotonics / https://twitter.com/nlphotonics
- Morteza Kamalian-Kopae @mortezakamalian / https://twitter.com/mortezakamalian
- ESR1 Steven Abreu: @steveabreu7 / https://twitter.com/steveabreu7
- ESR2 Guillaume Pourcel @GuillaumeAP https://twitter.com/GuillaumeAP
- ESR5 Mirko Goldmann: @MirkoGoldmann https://twitter.com/MirkoGoldmann
- ESR7 Diego Arguello Ron @DiegoArgelloRo1 / https://twitter.com/DiegoArgelloRo1
- ESR8 Daniel Hesslow @DanielHesslow https://twitter.com/DanielHesslow
- ESR11 Tigers Jonuzi @JonuziTigers https://twitter.com/JonuziTigers
- ESR12 Alessandro Lupo @alexl94 / https://twitter.com/alexl94
- ESR13 Long Hoang Nguyen @hoanglongj https://twitter.com/hoanglongj

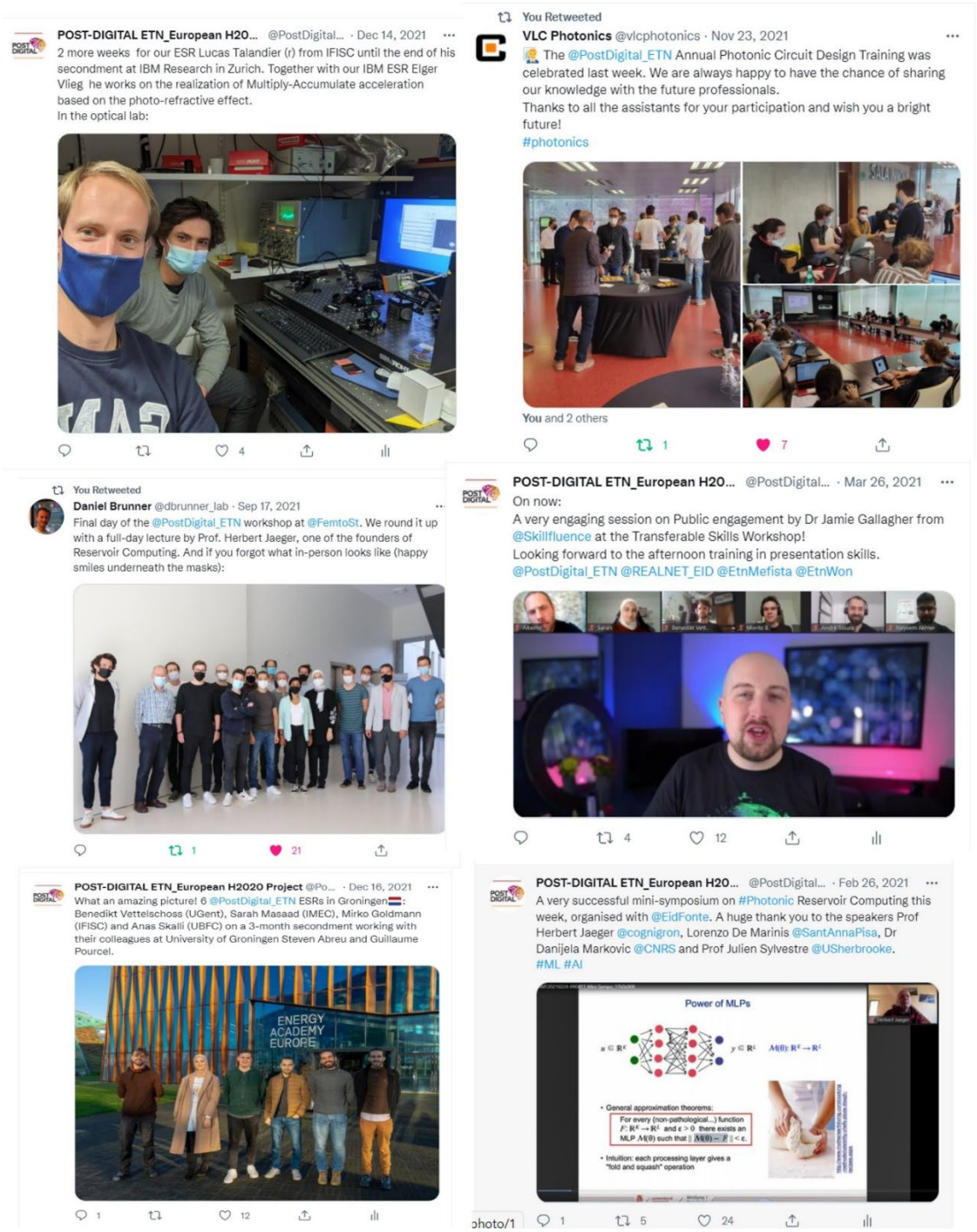

Figure 16 POST-DIGITAL on Twitter

Orcid and LinkedIn

To further widen the reach of their scientific output and to make it easily discoverable the POST-DIGITAL ESRs have individual LinkedIn and ORCID accounts.

3.3 Summary of Other Engagement Activities with Their Audience and Reach

In the following table are summarized some additional dissemination and outreach activities completed by members of the POST-DIGITAL team.

Date	Event	Location	Details	Audience	Size of audience
Feb-April 2022	IUPAP 100 PHOTO CONTEST 2022	Brussels (Belgium)	Enrico Picco, ESR at ULB will take part in the Photographic contest to celebrate the beauty of physics and the fun that can be encountered in its practice, with exposition for general public and scientists	General Public, students, researchers	100+
2022 (planned)	Swiss National Future Day	IBM Research - Zürich	Annual event to promote careers to primary school students. Elger Vlieg, ESR at IBM will show participants around at IBM.	Primary school 5-7th graders	30-60
2022 (planned)	Photo exposition for the park of Tournay-Solvay Castle in Brussels		Alessandro Lupo, ESR at ULB will take part in the photo exposition for the park of the Tournay-Solvay Castle in Brussels, open to the public. Dates of the event will be announced later. The selected pictures will be exposed accompained by a text. Alessandro's picture contains a reference to POST-DIGITAL project.	General public	
30 March 2022	Photonic in Industry	Ghent University	Sarah Massad, ESR9 from IMEC is involved in the organisation of an event to present the industrial role of photonics for students through workshops done by company representatives.	MSc+PhD students Ugent+VUB	60+ students
28 March 2022	Laboratories in Photonics Research	Ghent University	Sarah Massad, ESR9 from IMEC introduced research activities of our Reservoir Computing Research Group to MSc students through presentations and demos	MSc Students Ugent + VUB	Around 20 students
Feb 2022	Magazine article AG connect "Rekenen zonder te zweten" (dutch)	online	Ber Offrein from IBM wrote a magazine article about the team's work. AG connect is a dutch magazine for IT innovation.	Dutch IT community	

Jan. 2022	Photonics Research, UGent	Online	Sarah Massad, ESR9 from IMEC Presented her project to UGent's photonics research group members	Professors, postdocs, PhD students,	60-70
13 Dec 2021	Cognigron @ Work	online	Guillaume Pourcel, ESR from Groningen presented his research topic ("conceptor") to a wide scientific audience interested in the physics of computation.	Researcher in the University of Groningen from the department of Computer Science, Maths, Artificial Intelligence and Material Science.	About 40
10 Dec 2021	Annual AiPT Research Event	Aston University, Birmingham	Prof. Sergei Turitsyn, coordinator of POST-DIGITAL, presented the project to the AiPT community	AiPT researchers	80
09 Dec 2021	Podcast: "Toekomst Muziek" (dutch)	Spotify	The group lead Bert Offrein from IBM discussed the team's research in a spotify podcast.	General public	
October 2021	Meeting of the María de Maeztu research line L2 on brain-inspired analog computing in photonic and electronic systems at IFISC	IFISC	Lucas Talandier, ESR at IFISC gave presentation on the topic "Time-delay reservoir computing with phase information from an optical transmission system for data recovery."	Researcher at IFISC	
27 Sep 2021	Optica: Photonics in Switching and Computing	onine	Elger Vlieg, ESR15 from IBM gave the presentation: "Photonic Photorefractive MAC Accelerator for Machine Learning at the conference	Scientific	10-20
20 Sep 2021	Science speed dating	Campus UGent	Benedikt Vettelschoss, ESR10 at UGent took part in various 5 min one-on-one talks at IDLab, UGent	scientists	~40
27 April 2021	Laboratories in Photonics Research	Online	Sarah Massad, ESR9 from IMEC introduced research activities of the Reservoir Computing Research Group to MSc students through conducting presentations, online demos and discussion session.	MSc Students Ugent + VUB	Around 20 students

10 March 2021	PhD prospects	Online	Sarah Massad, ESR9 from IMEC discussed PhD prospects and MSCA fellowship with Erasmus+ MSc students	MSc students from European institutions	Around 20 students
14 Jan 2021	Master Day at the university ESPCI (Paris)	Online	Guillaume Pourcel, ESR at University of Groningen presented his research path from master's to PhD at the meeting of the master programme Bioengineering and Innovation in Neuroscience BIN	Students at ESPCI	About 30
15-19 June 2020	ePIXfab Silicon Photonics Summer School	online	Prof. Peter Bienstman, WP leader from the beneficiary Ghent University – imec, Belgium delivers an invited presentation on Neuromorphic Computing using silicon photonics	Researchers in the field of Photonics	
5 Dec 2019	2019 Annual Research Conference at AiPT	Birmingham, UK	AiPT Annual Research Celebration	Researchers in the field of Photonics	150
01-Oct-19	Brochure 'AIPT Educational Programmes 2019-20'	online and printed brochure	Produced a Brochure detailing Educational Programmes and postgraduate opportunities at AiPT including project POST-DIGITAL	Undergraduate and MSc students; scientists and Research Group leaders	1000 copies printed plus digital distribution
Sep-19	Brochure 'AiPT Postgraduate Opportunities 2019-20'	Birmingham, UK	Produced a Brochure about Educational programmes at AiPT, including project POST-DIGITAL	Scientists; graduate and undergraduate students	500 copies printed plus digital distribution