# Public XAI, Creative AI for Good, and other emerging themes in AI & Arts

A short summary of our research interests and promising directions for future work in The New Real

The New Real has set out to understand how AI can augment and be enriched by the arts, and how far data science and the arts can help to answer each other's questions. It is community-driven and has shaped a new field called 'Experiential AI' which aims both to support the creation of significant artistic works and to inspire new concepts and paradigms on ethical and responsible AI.

We have identified four promising directions for future research and development in AI & Arts:

1. Creative AI for good
2. New paradigms for human-centred creative AI
3. Next generation intelligent experiences
4. Public XAI and more-than-human intelligence
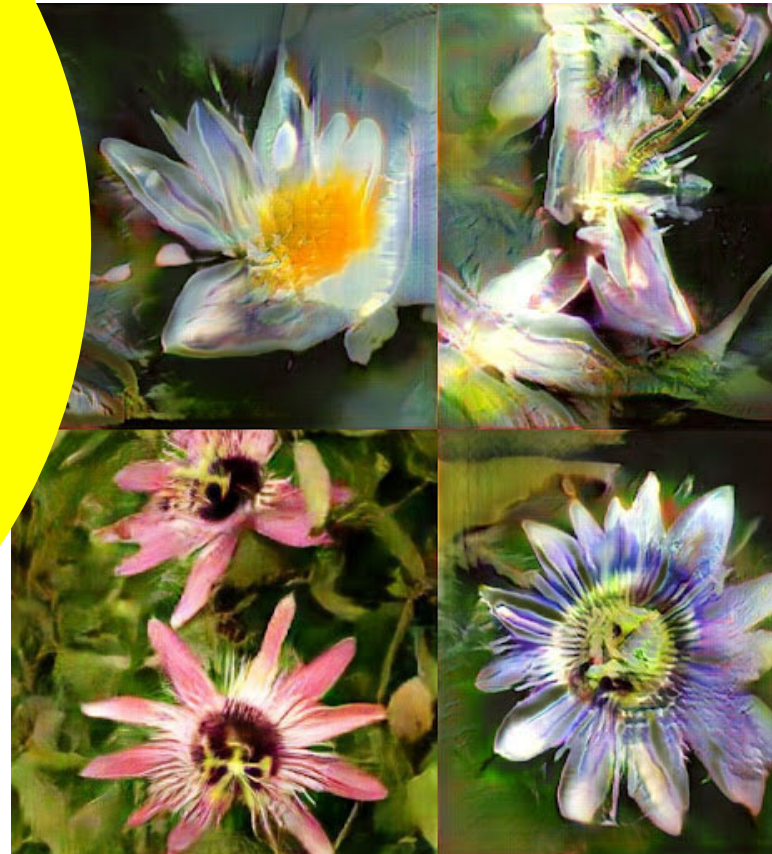
We first came together to explore how the arts could help to address challenges in AI science. In our research, we have seen that AI artists are adept at surfacing critical issues and scaffolding human understanding through the design of digital experiences. We found a field of critical practice in which artists work with AI technologies and data both as a medium and as a theme, both as a tool and as a topic. This has helped us to identify strategies used by artists and curators to develop and delight online audiences while simultaneously negotiating tensions and dilemmas that arise with AI-fuelled and data-driven experiences.

Building on this we asked how artistic methods can complement work in 'explainable AI' (XAI) by helping to make data-driven AI and machine learning tangible, interpretable, and accessible to the intervention of end users. Here, we are not concerned only with the internal operations of algorithms. We are also concerned with opening up algorithms, the science behind them, and their potential impacts in the world to user intervention, public scrutiny and policy debate.

This leads us to propose that legible intelligent systems need to be open to understanding and intervention at four levels:

Aspect - the framing of a current challenge or future scenario

Algorithm - the technology and catalyst that enables and is developed by the work

Affect - the quality and character of an experience for an audience, and

Audience and Apprehension - valuable learning within the human-AI interaction.

In The New Real, we looked at the explosion in AI and its implications for creativity and the arts. We also looked at the wider digital turn in the creative sector during COVID-19.

We brought these two strands of work together to propose future challenge themes for research and development on the Arts and AI:*

1. Creative AI for good
It's important to address critical issues and align development with social goals through a challenge-led approach, with a specific commitment to promote diversity, fairness and accountability for positive societal and environmental impact.

2. New paradigms for human-centred creative AI
Provocatively we ask how art and creativity can help to radically change how we think about AI design, to enable richer modes of model interpretation and interaction, and embrace human traits such as bias, disagreement, and uncertainty as a signal with creative potential rather than noise that needs to be removed.

3. Next generation intelligent experiences
To answer artist and audience demand for serendipity and spontaneity in data-driven and synthetic media,

we look to infuse experiences with intelligence, and intelligence with serendipity, across creative industries from visual arts and film to music and games.

4. Public XAI and more-than-human intelligence
Finally, we seek to enhance sense-making and agency where AI algorithmic techniques and human understanding of them mutually benefit. This is about more inclusive and democratic forms for explainable AI, and enabling creative shifts in cognitive perception through human-nonhuman interactions.

We invite you to join us on this journey which we hope can inspire a transformative research agenda for both AI science and the creative industries for the coming decade.

The New Real is a partnership between the University of Edinburgh, The Alan Turing Institute and Edinburgh's Festivals.

Links and further reading:
The first time the Experiential AI theme was proposed was in this article for AI Matters.

Our reflections on how AI artists help us understand the New Real are published here.

The challenge themes build on scenarios and promising directions for future R&D in the festivals sector following the COVID-19 crisis first proposed here.

You can read our thoughts on the contributions of experiential methods to explainable AI and the thinking behind the Experiential AI framework (4A's) in papers available here.

* These challenge themes were revised in November 2023 in light of our ongoing research.