# Alan Fleming, PhD

Link to research profile

Link to patent profile

I am an experienced, highly adaptable and collaborative researcher and data scientist in healthcare applications. Up till now I have been involved in imaging in ophthalmology and cardiology, though ideally, I would like to expand to research in other healthcare fields. I am particularly interested in contributing to data science and statistical aspects of medical research. I am enthusiastic about how that can lead to improvements in our healthcare systems or to health in society.

## Education

**PhD:** AI and geometric knowledge representation in manufacturing and robotics — University of Edinburgh 1982-87

**BSC Honours 2.1:** Mathematics and Physics — University of Glasgow 1978-82

## Career

**Lead Research Engineer / Principal Data Scientist** — Optos plc, Dunfermline, 2012-Present

- Design and implementation of computer vision and machine learning algorithms and tools including ways to combine application knowledge.
- Programming in Matlab, R, Python, JavaScript.
- Management of diverse projects leading to in-product ML solutions.
- Multi-disciplinary collaboration
- Business data analytics
- Successful patent applications.

**Research Fellow** — University of Aberdeen, 2003-2012

- Developed robust analyses for automated grading in diabetic eye screening. My collaborative work led to acceptance and deployment within NHS Scotland (C.J. Styles, Eye 33, 1357–1358, 2019).
- Designed algorithms for robust detection of diabetic eye disease at the patient level.
- Cleaned and linked data from Scottish Morbidity Register, General Register Office, Scottish Care Information Diabetes Collaboration, and diabetic eye screening.
- Performed studies on automated grading in diabetic retinopathy screening which led to many peer-reviewed publications.

**Development Engineer** — Nan Gall Technology Ltd, Aberdeen, 1995-2003

- Supported a small company by developing and supporting its software applications.

**Research Associate** — University of Edinburgh, 1992-1995

- Developed and validated a new biomarker ‘cardiac velocity gradient' still cited today.

**Electronics Engineer** — Diagnostic Sonar Ltd, 1990-1992

- Electronics design for medical ultrasound scanners.

## Skills

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| Programming Languages: | Matlab \| Python (Pandas, Seaborn, Sklearn), \| R (ggplot2, tidyverse) \| C++ \| JavaScript |
| Project management: | Writing protocols \| maintaining timelines & risk registers |
| Multi-disciplinary work: | Formal agreements \| statistical plans \| clinical protocols \| ethics applications |