

Donald J. Macleod

14 Knock, Point, Isle of Lewis,
Scotland,
HS2 0BW

PROFILE:

Mathematics, computing science and computer animation graduate with over 3 years industrial experience as a software developer. Looking to work in a Games Programmer role for a company where I can broaden and develop my range of skills.

EDUCATION:

2005 – 2006 **National Centre for Computer Animation,
Bournemouth University
MSc Computer Animation with Distinction**

Modules studied: Computer Graphics Fundamentals, Programming for Graphics, Computer Animation Principles & Practice, Visual Theory & Practice

Group Project: *“Enter the GogusSphere” computer game.*

Worked in collaboration with other MSc, MA and Digital Effects students to develop demo level of third-person shoot-em-up computer game developed in C++ using OpenGL (some initial captures of the game can be found at

http://www.youtube.com/view_play_list?p=9719786712D908D2).

My responsibilities in the group were:

- Camera system (design & implementation)
- Collision detection & space partitioning of collision planes (design & implementation)
- Octree space partitioning system for culling of terrain mesh (design & implementation in collaboration with another MSc student)
- Frustum culling (of Octree nodes) (design & implementation)
- User control system (design and implementation in collaboration with another MSc student)

Personal Research: *Path-Finding in Games.*

Survey of path-finding algorithms and techniques used in games. Details various search algorithms (including cost-based search algorithms such as Best Search First, Dijkstra, A*, IDA*, Fringe Search, HPA*, and D*), navigation graph construction techniques (such as tile-based, Points of Visibility, Corner Graph, and NavMesh) and path-finding optimisation techniques (such as time-slicing, path-splitting, and pre-computed hierarchical transition tables).

Computer Animation Principles & Practice Project: *Metaball Viewer.*

Implemented on both Windows & Linux in C++ using OpenGL. Scene generated from parsed scene file (containing information on scene lights, metaball shapes, material information of shapes, and shape affine transforms), viewable in both polygon and ray-trace mode.

Polygonisation of metaball iso-surface carried out using Marching Cubes algorithm. Polygon mode allows user to interactively place camera for ray-tracing in ray-trace mode.

Ray-trace mode incorporates ray-step ray-tracing of metaball iso-surface. Implemented features include anti-aliasing (low-level or recursive high-level), reflections, and shadows.

Movie capture of this application running will be available at <http://ncca.bournemouth.ac.uk/jmacey/MastersProjects/MSc06/index.html> on completion of this web-page.

Masters Project: *Skeletal Animation within a Virtual Environment.*

Implemented on both Windows & Linux in C++ using OpenGL. Motion Capture data from various human motions such as walk, run, sneak, limp (both in straight and turning directions), kick and punch were captured and applied to a model rigged and skinned in Maya 7.0. Animation and skinning data of Maya model extracted using Maya API for import into C++ application.

Skeletal Subspace Deformation (SSD) skinning technique implemented for run-time deformation of character skin according to current skeletal pose within motion.

Registration Curves techniques used for automatic generation of single quadratic B-Spline time-warp curve with matched timing of walk, run, sneak and limp motion cycles. Application provides interactive motion blending and motion interpolation of captured animations for continuous interactive streams of character motion. Smooth animation weight adjustment with cubic Bezier curve representation of time-dependant animation weighting. Import of data necessary for Registration Curves techniques and additional information such as transition timing information was carried out using XML parser.

Movie capture of this application running will be available at <http://ncca.bournemouth.ac.uk/jmacey/MastersProjects/MSc06/index.html> on completion of this web-page.

Miscellaneous Work: Some earlier project work included Houdini city/garden generator digital asset, Renderman procedural animation using Renderman C API (as yet unpolished animation available at <http://www.youtube.com/watch?v=K0rMgBXOBtY>), and relatively simple Maya modelling and animation projects.

Main skills and knowledge gained:

- C++ & OpenGL.
- A variety of computer animation algorithms & techniques.
- Working on a Linux environment.
- Microsoft Visual Studio 2005.
- Maya 7.0 with a basic knowledge of the Maya API & MEL scripting.
- Basic knowledge of Houdini 8 with solid knowledge of expressions and digital assets.

1999 – 2000 **University of Glasgow**
MSc Information Technology (Software & Systems) with Distinction

Main skills and knowledge gained:

- Java 1.2 (Swing/AWT GUI development, Collections framework, threads, JDBC, Java3D).
- SQL, Oracle, ER-diagram modelling.
- UML
- OO design patterns.

1995 - 1999 **University of Glasgow**
BSc Honours 2:1 in Mathematics.

1993 - 1995 7 Highers:
Accounting & Finance [B], Computing [C], English [B], Geography [C], Mathematics [A], Physics [B], Technical Studies [B]
1 SYS:
Mathematics [C]

WORK EXPERIENCE:

June 2004 – **Software Developer at IFS Defence Ltd.**

September 2005 &

October 2001 –

November 2002

Skills gained and developed:

- PL/SQL
- Rational Rose
- Oracle 8i
- Seagate Crystal reports
- Centura client/server application development
- Harvest version control system
- IFS Connect- BizAPI Java development

November 2002 - **Various manual labour jobs whilst backpacking in New Zealand and Australia.**
May 2004

December 2000 -
September 2001

Java Software Developer at Netcentric Systems Ltd.

Skills gained and developed:

- Unix (with using Solaris operating system).
- Java 1.3.
- Additional Java packages such as the RMI packages for client/server communication, and some open source APIs such as JUnit and SAX (Simple API for XML).
- XML.
- CVS version control system.

September 2000

Lab demonstrator for the 2000-2001 MSc in IT pre-term Java programming course.

ACHIEVEMENTS:

Won the Mathematics Prize in The Nicolson Institute in 3rd and 5th year (1992 and 1994).

Received “Above and Beyond the Call” award from IFS Defence Ltd in 2005 for my work at Lockheed Martin on the JAMES project.

PERSONAL DETAILS:

Date of Birth: 28th January 1977
Marital Status: Single
Driving License: Full, clean
Home Phone Number: +44 (0)1851 870 476
Mobile Number: +44 (0)7828 642 601
E-mail Address: macleoddj@yahoo.co.uk

INTERESTS:

My interests include playing football, snooker, pool and video games. I represented my school football team and I also played for my home football team at junior level until I left for university. I also enjoy both freshwater and sea fishing.

REFEREES:

Available on request.