# CARLO FOURIE

**PROFESSIONAL GIS PRACTITIONER / GRADUATE GEOLOGIST**

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## *Professional Profile*

I am from a multi-disciplinary background with an MSc in Geographical Information Systems (GIS), a Hons degree in Geology and a BSc in Agricultural Sciences.

I have applied my skills in both the agricultural and mineral exploration environment, with a strong emphasis on satellite remote sensing, GIS, and 3D modelling. My strong sense of discipline, mature attitude and good people skills ensure that I can work both independently as well as part of a team.

Ultimately, I would like to express my abilities, knowledge and experience in a multi-disciplinary approach towards exploration challenges, combining both GIS/Remote Sensing and geology. Furthermore, my aim is to build upon my geological knowledge and become proficient in this field as a practicing geologist.

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## *Personal Info*

- **Surname:** Fourie
- **Name:** Carlo
- **First names:** Johannes Christoffel
- **Date of birth:** 1977-08-24
- **Nationality:** South African
- **Language proficiency:** Afrikaans, English (both excellent written and spoken)
- **Marital status:** Unmarried
- **Criminal record:** None
- **Health:** Very good

## *Academic Qualifications*

- **Honours degree in Geology, 2010**

The following modules were completed as part of the applied geology stream: geology of Southern Africa, structural geology, igneous & metamorphic petrology, geochronology, statistics for earth scientists, gold mineralisation, mineral economics, ore microscopy, geophysics for earth scientists, hydrogeology

- **MSc degree in Geographic Information Systems, 2003 – 2006**

This degree covered a wide array of subjects and focussed mainly on aspects and applications of both raster and vector data types, database design, and GIS management & implementation. In addition, the following concepts were also discussed and applied:

- Theoretical knowledge and practical experience in the application of satellite remote sensing data, including the object-oriented approach as implemented in eCognition;
- Advanced Satellite Remote Sensing for Quantitative Analysis;
- Polarimetric Radar (SAR) Image processing;
- Theoretical knowledge and practical experience in the use of Global Positioning Service (GPS).

- **BSc degree in Agricultural Sciences, 1996 – 2000**

Main subjects were entomology and plant pathology, but soil science and horticulture was also covered in significant detail.

# WORK EXPERIENCE

## *Creo Design*

**Jan 2007 - present**

**Professional GIS Practitioner/Junior Geologist**

This position entailed various GIS-related, geological and managerial duties:

- Image processing to guide mineral exploration efforts, pre-processing ro remove atmospheric conditions & topographic distortions, discrimination between minerals/rocks on the basis of spectral signatures, and image classification; Various formats used: Landsat, Ikonos, ASTER, GeoEye, SPOT 5, Quickbird.
- Capturing of geological data for further analysis and interpolation techniques to predict mineralization trends;
- Database setup, validation, borehole planning, 3D ore body modelling and volume estimations using Gemcom Surpac;
- Creation, validation and editing of Digital Elevation Models (DEMs) through GPS data, contour lines and other grid formats; Used for mine planning, hydrological modelling, borehole planning, cut-and-fill practices/volume estimations, lineament mapping, visibility analysis, predictive analysis.
- Various fieldwork exercises mostly involving GPS-captured features, outcrop mapping and assistance with core logging;
- Supervising a drilling program and capturing of drilling data;
- Quote estimations for clients concerning our GIS consulting services, i.e. approximate time & cost implications;
- Report writing in the form of proposals, final deliverables, recommendations and results of various projects.
- Dedicated involvement with geological aspects of projects: alluvial diamonds, SEDEX-type manganese deposit, Tungsten/Tin skarn deposit, gold.
- General maintenance, planning & management of GIS department;
- Data capturing, editing and importing from various sources (both vector and raster);
- Map production for logistical planning purposes and for guiding exploration efforts;

## *Department of Geography and Environmental Studies, University of Stellenbosch*

**July 2008 – June 2009**

**Part-time lecturer**

Lecturer for 3rd year geography/geology students on the basic principles of satellite remote sensing and radar.

## *IRIS International*

**Feb 2006 – Dec 2006**

**Image analyst & GIS practitioner**

Participation in land cover classification across the Kuanza Sul Province, Angola, using Landsat MSS, TM and ETM datasets. Various other GIS-related duties were also fulfilled during this time including hydrological modelling, georeferencing of datasets and QA/QC tasks.

## *Computamaps*

**Jan 2006 – Feb 2006**

**Image analyst (part-time)**

Image classification from various satellite imagery sources, producing land cover/land use classes.

## *Writing Centre, University of Stellenbosch*

**Jan 2004 – Nov 2005**

**Writing lab consultant (part-time)**

Assistance provided for undergraduate and post-graduate students on their writing techniques, varying from assignments to research manuscripts.

## *Projects*

I have been involved with numerous projects, with the most important listed below:

- Land cover classification, Kuanza Sul, Angola (GIS & remote sensing);
- Mount Carmel diamond-bearing kimberlites, Israel (GIS & geological modelling);
- Hondekloof Nickel, Northern Cape, South Africa (Massive sulphide, GIS);
- Involvement in ESKOM Thuyspunt 400kV nuclear power lines EIA (GIS);
- Wetland delineation, Western Cape, South Africa (GIS & remote sensing);
- Detection of possible sources for building sand, Western Cape, South Africa (GIS & remote sensing);
- Feasibility study for diamond-bearing megalodon channel, Northern Cape, South Africa (hydrological modelling & remote sensing);
- Otjosondu Manganese Field, Namibia (SEDEX, GIS, remote sensing, geological modelling, geology);
- Riviera Tungsten deposit (Skarn, GIS, geological modelling, UV lamping of core)
- Volume calculations (geological modelling);
- Borehole data capturing and interpolation of overlying geological layers' thickness to guide drilling (GIS, geology);
- Prospecting for various projects in South Africa, Namibia, Angola, DRC, Cameroon, Gabon, Mali and Chilé (GIS & remote sensing);
- Supervising a drilling program on a manganese deposit in North West Province;
- Evaluating agricultural potential of a Cape Metropolitan catchment: A fuzzy logic approach (MSc project);
- Vertical and lateral variation of garnet chemistry and accessory phases in the Otjosondu Manganese Field, Namibia (used as basis for a presentation during a geological congress in Chilé)

## Software

- TNT Mips
- Gemcom Surpac
- ArcGIS suite (including ArcPad)
- Global Mapper
- Surfer
- Erdas Imagine
- IDRISI
- eCognition
- Manifold
- MS Office

## Affiliations

- Member of Geo-Information Society of South Africa (GISSA);
- Member of Geological Society of South Africa (GSSA);
- Applied for accreditation from the South African Council for Natural Scientific Professions (SACNASP) – awaiting results from evaluation process;

## References

- Guy Aldworth, Technical director, Creo Design (Pty) Ltd, Stellenbosch: 021-8800223, Fax: 021-8800226, Cell: 083 676 0880, e-mail: guy@creo.co.za;
- Dr Johan Hattingh, Executive Chairman, Creo Design (Pty) Ltd, Stellenbosch: 021-8800223, Fax: 021-8800226, Cell: 083 625 8818, e-mail: hattingh@creo.co.za;
- Hennie van den Berg, IRIS International, Potchefstroom: 018-2976287, Fax: 088018-2976287, Cell: 082 878 2760, e-mail: hennievdb@softhome.net
- Prof JH (Hannes) van der Merwe, Head of the Department of Geography and Environmental Studies, US: 021-8083103/3218, Fax: 021-8083109, e-mail: jhvdm@sun.ac.za