

Binil Starly

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Objective: A career in the design and manufacturing industry with focus on research and development in the field of product realization, biomedical scaffolds/implants and microfabrication technologies.

Expertise: Extensive experience in providing engineering consultancy
Experience in product realization and development
Skilled with over 2000hrs of CAD/CAE/Simulation software package usage
Hands on experience in rapid prototyping technologies (3DP, FDM)
Training instructor for CAD/CAE/Medical software

Education: **B.Tech**, Mechanical Engineering (2001), Kerala University, Kerala, India
Senior Design: “Design and Development of a Two Seater Hovercraft”
PhD, Mechanical Engineering (ant. 8/2005), Drexel University, Philadelphia, PA
Thesis: “Biomimetic Design and Freeform Fabrication of Tissue Replacement Structures”

Professional Experience: **Assistant Director**, Rapid Product Development Center (RPDC), **March ‘02 - Present**
Role: Involved in providing engineering consultancy services for start up and small companies in the Philadelphia region through the use of state of the art CAD/CAE technologies.

- “Design Optimization of Diaphragm Compressor Components”, PPI Inc, Warminster, PA
- “CFD Analysis for different Nozzle Head Configurations”, Lasermation, Philadelphia
- “Engineering Failure Analysis of Spinner 100 Industrial Cleaning System”, Sun Hydrocorp LLC, Devon, PA
- “Image Guided Reconstructive Surgery”, St. Christopher Children’s Hospital, Philadelphia

Research Assistant, Computer Aided Tissue Engineering Laboratory, **March ‘02 – Present**
Involved in collaborative research work with Therics Inc, Princeton, NJ with successful completion of two major projects.

- Direct Slicing of STEP Based NURBS Models for TheriForm™ System
The project involved the generation of process planning instructions from a CAD model database for use in the proprietary 3D Printing based TheriForm™ fabrication system.
- Internal Architecture Design of Tissue Replacement Structures
Developed a simple but effective design methodology for the internal architecture of tissue scaffolds using unit cell based design theory for application in tissue engineering.

Skills Set:

- CAD software packages such as AutoCAD, IronCAD, SolidWorks, Pro/Engineer
- Finite Element Analysis/Fluid packages – ANSYS, ProMechanica, ABAQUS, Star-CD
- Experience in Rapid Prototyping – 3D Printing, Fused Deposition Modeling systems
- Medical Image Processing & Reverse Engineering Software – MIMICS, GEOMAGICS
- Micro Fabrication Technologies – Photolithography, Etching, MEMS devices
- Programming Languages such as C, C++, Visual C++, HTML, Database Management

Awards: Joseph E Carolene Award for Academic Merit, 2004-2005
Whitaker Foundation Student Travel Award, 2005

Activities:

- Teaching Fellow at the Department of Mechanical Engineering teaching MEM 435 –

Introduction to CAD/CAM and MEM 201: Introduction to CAD, course sequences.

- Currently advises Senior Design Students in their projects related to CAD, FEA and RP.
- Positions in Mechanical Engineering Graduate Association: Social Coordinator and Ad-hoc member (MEGA) and the Graduate Student Research Council: Library Coordinator (GSRC).
- Participated in the Summer Engineering Experience at Drexel (SEED) program and the Research Experience for Teachers (RET) program at Drexel. Activities involved mentoring high school students and High School teachers in advanced CAD technologies.

Journal Publications:

1. **Starly B.**, Fang Z., Sun W., “ Internal architecture design methodology for tissue replacement structures”, Computer Aided Design, in review
2. **Starly B.**, Fang Z., Sun W., Shokufandeh A., Regli W., “Three Dimensional Reconstruction for Medical CAD modeling”, Computer-Aided Design and Applications, Vol. 2, Nos. 1-4, CAD'05, 2005 to be published.
3. Fang, Z., **Starly, B.**, Sun, W., Shokufandeh, A., Regli, W., “A Computer Aided Multi-Scale Modeling for Direct Fabrication of Bone Tissue Structures”, Computer-Aided Design and Applications, Vol. 2, No 5, 2005 to be published.
4. Sun, W., **Starly, B.**, Nam, J. and Darling, A., “Bio-CAD Modeling and Its Applications in Computer-Aided Tissue Engineering”, Computer-Aided Design, in press.
5. Wettergreen MA, Bucklen BS, **Starly B**, Yuksel E, Sun W, Liebschner MAK, “Creation of a Unit Block Library of Architectures for Use in Assembled Scaffold Engineering”, Computer-Aided Design, in press.
6. **Starly, B.** Lau, A., Sun, W. Lau, W. and Bradbury T., “Direct Slicing of STEP Based NURBS Models for Layered Manufacturing,” Computer-Aided Design, Vol 37, Issue 4, April 2005, pp 387-397
7. Fang, Z., **Starly, B.** and Sun, W., “Computer-Aided Characterization of Effective Mechanical Properties for Porous Tissue Scaffolds,” Computer-Aided Design, Vol. 37, No. 1, 2005, pp. 65-72.
8. Sun, W., Darling, A., **Starly, B**, Nam, J., “Computer-Aided Tissue Engineering: Overview, scope and challenges”, Biotechnology and Applied Biochemistry, Vol. 39, Issue 1, 2004, pp. 29-47.
9. Nam, J., **Starly, B.**, Darling, A. and Sun, W., “Computer Aided Tissue Engineering for Modeling and Design of Novel Tissue Scaffolds” J. of Computer-Aided Design and Application, Vol. 1, No. 1-4, 2004, pp. 633-640
10. Sun, W., **Starly B**, Darling, A., Gomez, C., “Computer-Aided Tissue Engineering: Application to biomimetic modeling and design of tissue scaffolds”, Biotechnology and Applied Biochemistry, Vol. 39, Issue 1, 2004, pp. 49-58.

Patents:

- US Patent Pending: “Apparatus, Method and Article for Direct Slicing of STEP based NURBS models for Solid FreeForm Fabrication”, Application No:60/487,463 (co inventors - Thomas Bradbury, Dr Wei Sun, Wing Lau, Dr Alan Lau).
- Patent in Review: “A Process of Using Computer Modeling, Reconstructive Modeling and Simulation Modeling for Image Guided Reconstructive Surgery (co inventors Dr Joseph Piatt, Dr Wei Sun).

References:

Available upon request