

Eugene J. (Gene) Alexander, PhD
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EDUCATION

1994 – 1998: PhD. Electrical Engineering and Computer Science, University of Illinois at Chicago - *Estimating the Motion of Bones from Markers on the Skin*

1991 – 1994: MSc. Electrical Engineering and Computer Science, University of Illinois at Chicago - *Distributed Experimentation through Networked Measurement Servers*

1988 – 1991: BSc. Electrical Engineering, High Honors, University of Illinois at Chicago

PROFESSIONAL EXPERIENCE

2016 – current: Chief Technology Officer, Body Surface Translations, Atlanta, GA

First employee in this startup, funded by Georgia Research Alliance, Elanco, and Gates Foundation. Developed computer vision and machine learning algorithms to characterize livestock body characteristics for animal husbandry purposes, and transitioned that technology to automatic anthropometry of humans. Supervised outsourced hardware development team, farm experiments, and human clinical trials.

- Conceptualized weight estimation algorithms, developed technical case, conducted preliminary research and algorithm development, managed software development project. Designed and implemented weight estimation algorithm that improved device from 55% of animals within 5% of scale weight to 96% within 5%.
- Assisted in raising more than \$900K in seed funding from corporate venture arm of Elanco (Eli Lilly animal health subsidiary).
- Assisted in raising more than \$3M in research funding from the Bill and Melinda Gates Foundation and various academic and commercial entities to transition scanning technology to child anthropometry applications.

2014 – 2015: Clinical Assistant Professor and Director, Launch Labs, Leatherby Center for Entrepreneurship and Business Ethics, Argyros School of Business and Economics, Chapman University

Work with faculty and students to define technologies and tools needed for projects. Assist in determining project timelines. Translate requirements into effective technology solutions and help with coordination of implementation. Review, evaluate and recommend existing and emerging technologies for current and future project needs. Work with faculty and students to assess needs for their websites and other engineering problems. Participate in meetings with faculty and students that identify project strategies and technology required to support these projects. Mentor students in determining technology solutions as they shape ideas into products or businesses. Coordinate and/or teach short courses in currently relevant software engineering or entrepreneurship business topics. Act as director of student incubator.

- Managed transition from fifteen student incubator teams, none funded, to more than 30 companies which raised more than \$4M in private equity 18 months

- Managed California Dreamin' for two years, one of the top 10 business model competitions in the US
- Initiated and led the Leatherby Center merger with the Film and Law schools, to produce Entertainment Launch Labs

2009 – 2013: Vice President and General Manager Motion Analysis Corporation, Santa Rosa, CA
Integration of MaMoCa into MAC, development of intellectual property, design of overall system architecture, directing software and hardware development teams in the technology integration.

- Successfully transferred startup company technology and IP portfolio to acquiring company, and deployed elements of the technology at Motion Analysis Studios, a subsidiary of Motion Analysis Corporation.
- Revitalized failing studio operation, made significant personnel changes, set studio on path to success.

2005 – 2009: Founder and CEO MaMoCa, Inc., Santa Ana, CA

Managed and oversaw all functions of this angel funded technology start-up, which employs computer vision biomechanics to produce 3D content for the animation (feature film and games) industry.

- Conceptualized product, developed business and technical cases, conducted preliminary research and algorithm development, developed business plan, raised money, developed and protected the company IP, and built a highly productive mixed in-house and outsourced development team.
- Raised more than \$1.2M in seed funding, filed four US and PCT patent applications, developed a prototype hardware system, developed system software, established initial studio.
- Won the 2006 Tech Coast Venture Network Survivor competition, Best Presentation award for 2006 Tech Coast Angels Fast Pitch, and named one of OnHollywood Top100 Private Digital Media Companies for 2007.
- Company acquired in 2009

1998–2004: Lecturer & Senior Research Engineer, Stanford University, Stanford, CA

Directed day-to-day research laboratory operations for a research group for one of the top three mechanical engineering departments in the world, with an annual budget in excess of \$3M. Supervised 8-10 students and junior employees. 90% appointment, promoted from Research Associate & Lecturer to Research Engineer to Senior Research Engineer. Supervised the team and operation of three motion capture laboratories (clinical, population studies, and technology development).

- Designed and developed novel technologies for the estimation of human skeletal motion, with primary application to orthopedic applications, particularly diseases and injuries of the knee. Administered, documented, and reported on experimental human population studies requiring IRB approval, informed consent, patient confidentiality.

- Conceptualized research directions, developed grant proposal ideas, recruited collaborators, developed a research plan, developed budget, wrote and defended the proposals.
- Wrote invention disclosures and developed university IP resulting in multiple issued and pending patents.
- Wrote more than 30 journal papers and refereed conference proceedings.
- Obtained more than \$10M in research funding from the National Inst Health, Veterans Administration, National Science Foundation, and Office of Naval Research.

2000 – 2004: Co-founder/Chief Technical Officer, Imaging Therapeutics, San Mateo, CA
Orthopedic medical device startup.

- Conceptualized the products, built and protected the IP, raised public and private funding of >\$10M, researched and developed the algorithms and the engineering case, developed the product and the development team, obtained FDA approval, and successfully sold company with a 4 FDA approved products on the market.
- Obtained National Inst Standards Advanced Technology Program grant, awarded \$3M over two years.
- Wrote multiple issued and pending patent applications.
- Company went public (as Conformis) in 2015

1990 - 1998: Director of Engineering, Computerized Functional Testing , Chicago, IL
Designed, developed, built, installed and serviced an orthopedic system/laboratory along with an enabling service. Promoted from Electronic Technician to Engineer to Director. Split position with Rush Presbyterian.

- Design and fabricate the electronic hardware and accompanying software for a human motion capture system, usable by non-experts with data transferred to a central facility for processing and clinical evaluation.
- Developed algorithms and software to perform system control, camera calibration, data acquisition, data processing from pixels to optimal estimation of joint kinetics and kinematics.
- Installed labs and trained users from more than 15 motion capture laboratories around the world. Built up one of the largest databases of human motion profiles in the world.

1988 - 1998: Research Engineer III, Rush Presbyterian St. Luke's Medical Center, Chicago, IL
Directed day-to-day orthopedic research laboratory operations for a research group within the Department of Orthopedic Surgery, a leader in human motion capture for orthopedic applications. Promoted from Electronic Technician to Engineer I then II and finally III. Split position with CFTC. Supervised 5-6 students and one employee in clinical orthopedic research.

PATENTS

P. Lang; D. Steines; E. Alexander, T. Andriacchi, Joint and Cartilage Diagnosis, Assessment and Modeling, US Patent #9,289,153 B2.

E. Alexander, Device for generating three dimensional surface models of moving objects, US Patent# 8,848,035.

E. Alexander, T. Andriacchi, P. Lang, S. Napel; Assessing the Condition of a Joint and Preventing Damage, US Patent# 8,862,202

E. Alexander, T. Andriacchi, P. Lang, S. Napel; Assessing the Condition of a Joint and Preventing Damage, US Patent#8,265,730

E. Alexander, Device and method for calibrating an imaging device for generating three dimensional surface models of moving objects, US Patent #8,223,208.

E. Alexander, T. Andriacchi, P. Lang, D. Steines; Assessing the Condition of a Joint and Devising Treatment, US Patent #RE43,282-E

E. Alexander, T. Andriacchi, P. Lang, D. Steines; Assessing the Condition of a Joint and Devising Treatment, US Patent #8,112,142

E. Alexander, Method for synchronizing the operation of multiple devices for generating 3D surface models of moving objects, US Patent #7,643,158.

E. Alexander, T. Andriacchi, P. Lang, D. Steines; Assessing the Condition of a Joint and Devising Treatment, US Patent #7,239,908, EU Patent # 1,322,225.

PUBLICATIONS IN REFEREED JOURNALS

Gupta P, Sivalogan K, Oliech R, Alexander E, Klein J, Addo O, Gethi D, Akelo V, Blau D, Suchdev P. Impact of anthropometry training and feasibility of 3D imaging on anthropometry data quality among children under five years in a postmortem setting. PLoS ONE 18(9): e0292046. <https://doi.org/10.1371/journal.pone.0292046>

Conkle, J., Suchdev P., Alexander, E., Flores-Ayala, R., Ramakrishnan, U., Martorell, R. Accuracy and Reliability of a Low-Cost, Handheld 3D Imaging System for Child Anthropometry, PLOS|One, 13(10): e0205320. <https://doi.org/10.1371/journal.pone.0205320> October 2018.

Andriacchi T.P., Mündermann A., Smith R. L., Alexander, E.J., Dyrby C.O., Koo S.; A Framework for the In Vivo Pathomechanics of Osteoarthritis at the Knee, Annals of Biomechanical Engineering, 32(3), pp 447-457, March 2004.

Alexander, E.J., Bregler C., Andriacchi, T.P.: Nonrigid Modeling of Body Segments for Improved Skeletal Motion Estimation, Computer Modeling in Engineering and Science, Vol 4, Number 3 & 4, pp. 351-364, 2003.

Nagura T., Dyrby, C.O., Alexander, E.J., Andriacchi, T.P.: Mechanical Demand on the Knee Joint During Deep Flexion, Journal of Orthopedic Research, (20) July 2002, pp. 881-886.

Alexander, E.J., Andriacchi, T.P.: Correcting for Deformation in Skin Based Marker Systems, Journal of Biomechanics, 34(3) 355-362, Mar 2001.

Andriacchi, T.P., Alexander, E.J.: Studies of Human Locomotion: Past, Present, and Future, Journal of Biomechanics, 33(2000) 1217-1224, October 2000.

Lang P, Alexander EJ, Andriacchi TP: Assessment of tibiofemoral contact area during load-bearing in OA patients using integration of MRI and biomotion studies. Arthritis and Rheumatism, v43 (#9/SS) 929-934, September 2000.

Andriacchi, T.P., Lang, P.K., Alexander, E.J., Hurwitz, D.E.: Methods for Evaluating the Progression of Osteoarthritis, *Journal of Rehabilitation Research and Development*, 37(2), 163-170, Mar/Apr 2000.

Andriacchi, T.P., Alexander, E.J., Toney, M.K., Dyrby, C.O., Sum, J.: A Point Cluster Method for In Vivo Motion Analysis: Applied to a Study of Knee Kinematics, *Journal of Biomechanical Engineering*, 120(12) 743-749, 1998.

PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS

Conkle J, Ramakrishnan U, Suchdev P, Flores-Ayala R, Alexander EJ, Martorell, R: Accuracy and Reliability of a Low-Cost, Handheld 3D Imaging System for Child Anthropometry. *International Congress of Nutrition 2017*, Buenos Aires, Argentina, Oct 15-20 2017.

Mündermann L, Corazza S, Chaudhari AM, Alexander EJ, Andriacchi TP: Most favorable Camera Configuration for a Shape-From-Silhouette Markerless Motion Capture System for Biomechanical Analysis. *IS&T/SPIE 17th Annual Symposium on Electronic Imaging Science and Technology*, San Jose, CA, January 2005.

Mündermann L, Chaudhari AM, Alexander EJ, Andriacchi TP: Estimation of the accuracy of a shape-from-silhouette markerless motion capture system, *28th meeting of the American Society of Biomechanics*, Portland, OR, September 2004.

Alexander, E.J., Andriacchi, T.P., Bregler, C.: Estimation of Skeletal Kinematics Through High Feature Density Video Based Motion Capture, *8th International Symposium on 3D Human Movement*, pp. 53 - 56, Tampa, FL, Mar 31 – Apr 2, 2004.

Corazza S., Alexander E., Chaudhari A., Cobelli C., Andriacchi T., Surface from silhouette reconstruction for markerless motion capture, *6th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*, Madrid, Spain, Feb 25-28, 2004.

Koo, S; Dixit, A N; Alexander, E J; Gold, G; Goodman, S; Andriacchi, T P: Morphological Variations of Femoral cartilage are Influenced by Gait Characteristics in Healthy and Osteoarthritic Knees, *50th Annual Meeting of the Orthopaedic Research Society*, San Francisco, CA, 2004

Koo S., Dixit, A.N., Alexander, E.J., Andriacchi T.P., A Rule Based Approach to Improve Cartilage Thickness Measurement Reproducibility from Knee MRI, *American Society of Biomechanics Conference*, Toledo, OH, Sep 25 – 27, 2003.

Ueda, s., Dyrby, C.O., Alexander, E.J., Andriacchi, T.P.: Gait Style Affects External Knee Adduction Moment, *American Society of Biomechanics Conference*, Toledo, OH, Sep 25 – 27, 2003.

Seo, J., Alexander, E.J., Andriacchi, T.P.: Structured Light Generation of Subject Specific Human Body Models for Motion Capture Applications, *American Society of Biomechanics Conference*, Toledo, OH, Sep 25 – 27, 2003.

S Koo, EJ Alexander, GE Gold, NJ Giori, TP Andriacchi. Morphology and thickness in tibial and femoral cartilage at the knee is influenced by the mechanics of walking. *ASME Summer Bioengineering Conference*, Miami FL 2003

Ueda, S.; Dyrby, C.O.; Alexander, E.J.; Andriacchi, T.P.: Adduction Moment, Radiographic Disease Severity, and Pain in Osteoarthritis of the Knee, ASME Summer Bioengineering Conference, Key Biscayne, FL, June 25-29, 2003.

Alexander, E.J., Andriacchi, T.P.: Improving the Analysis of Human Movement Using Markerless Motion Capture, ASME Summer Bioengineering Conference, Key Biscayne, FL, June 25-29, 2003.

Alexander, E J; Dyrby, C O; Andriacchi, T.P., Kinematic Patterns and Knee Cartilage Thickness, 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, February 2-5, 2003.

Andriacchi, T.P; Koo, S.B; Alexander, E.J.; Dyrby C.O, Giori, N, Goodman, SB Loading During Walking Predicts Regional Variation in Femoral Cartilage Thickness at the Knee, 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, February 2-5, 2003.

Nagura, T., Andriacchi, T.P, Alexander, E.J, Matsumoto, H; Muscle Co-Contraction Increases the Load on the Posterior Cruciate Ligament During Deep Knee Flexion, 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, February 2-5, 2003.

D Fisher, T Andriacchi, E Alexander, C Dyrby, E Morag. Initial gait characteristics influence the effect of footwear intervention to modify knee loading. TRANSACTIONS OF THE ANNUAL MEETING-ORTHOPAEDIC RESEARCH SOCIETY, 700-700. 2002

T Nagura, T Andriacchi, E Alexander, A Chaudhari, C Dyrby. The importance of the posterior cruciate ligament during deep knee flexion. TRANSACTIONS OF THE ANNUAL MEETING-ORTHOPAEDIC RESEARCH SOCIETY, 889-889. 2002

Torresani, L., Yang, D., Alexander, E.J., Bregler, C.: Tracking and Modeling Non-Rigid Objects with Rank Constraints, Proceedings of the Computer Vision and Pattern Recognition Conference, 2001. (Winner, Best Student Paper Award).

Andriacchi, T. Camarillo, D., Alexander, E., Dyrby, C, D: Mechanical Factors can Influence the Gender Differences in the Incidence of Non-Contact ACL Injury, BED-Vol. 51 Bioengineering Conference ASME 2001.

Alexander E.J., Andriacchi T.P.: A Model Based Approach for Efficient Segmentation of Knee Cartilage from MR Image Data, BED-Vol. 51 Bioengineering Conference ASME 2001.

Chaudhari A.M., Bragg R.W., Alexander E.J., Andriacchi T.P.: A Video-Based, Markerless Motion Tracking System for Biomechanical Analysis in an Arbitrary Environment. BED-Vol. 50 Bioengineering Conference ASME, pp. 777-8, 2001.

Nagura T., Dyrby C.O., Alexander E.J., Andriacchi T.P.: Mechanical Loads on the knee joint during deep flexion. BED-Vol. 50, Bioengineering Conference ASME, pp. 393-4, 2001.

Alexander E.J., Bregler C, Andriacchi T.P.: Limb Segment Pose from Range Data Streams Through Homogeneous Factorization. BED-Vol. 50, Bioengineering Conference ASME, pp. 371-2, 2001.

Alexander, E.J, Andriacchi, T.P., Lang, P.K, Steines, D.: Assessment of Osteoarthritis Progression Through Dynamic Functional Joint Imaging. 2001 Conference of the Clinical Gait and Movement Analysis Society, Sacramento, April 25-28, 2001.

Andriacchi, T. Camarillo, D., Alexander, E., Dyrby, C., Hurwitz, D: Gender Differences in the Biomechanics of Running and Cutting Maneuvers Relative to Non-Contact ACL Injury, Transactions of the Orthopedic Research Society, 2001.

T Nagura, C Dyrby, A Chaudhari, J MacMahon, E Alexander, T Andriacchi. Evaluation of dynamic joint loading during rising and descending to a kneeling position. Hip 12, 15. 2000

Lang, P., Alexander, E.J., Andriacchi, T.P.: Functional Joint Imaging: A New Technique Integrating MRI and Biomotion Studies. International Society of Skeletal Radiology Annual Conference 2000.

Lang, P., Alexander, E.J., Andriacchi, T.P.: Integration of MRI and Biomotion Studies. American College of Rheumatology Annual Conference 2000.

Lang, P., Alexander, E.J., Andriacchi, T.P.: Functional Joint Imaging: A New Technique Integrating MRI and Biomotion Studies. Osteoarthritis Research Society International Barcelona, Spain, October 4-7 2000.

Andriacchi, T.P., Alexander, E.J., Design Issues in Tissue Engineered Cartilage Replacement, ASME Winter International Congress and Exposition, Orlando, FL, 2000.

Lang P., Alexander, E.J., Andriacchi, T.P.: Functional Joint Imaging: A New Technique Integrating MRI and Biomotion Studies, International Society for Magnetic Resonance in Medicine, 2000.

Alexander, E.J, Lang, P.K, Andriacchi, T.P., Steines, D.: Dynamic Functional Joint Imaging, Computer Assisted Radiology and Surgery 14th International Conference, San Francisco, CA, pp. 303-308, June 18 - July 1 2000.

MacMahon, J.M., Alexander, E.J., MacMahon, E.B., Andriacchi, T.P.: A Functionally Based 3-D Coordinate System of the Knee for Diagnostic Use and Pre-Operative Planning, Computer Assisted Radiology and Surgery 14th International Conference, San Francisco, CA, 208-213, June 18 – July 1, 2000.

Alexander, E.J, Andriacchi, T.P., Lang, P.K: Functional Imaging of the Normal and Arthritic Knee, Proceedings of the 24th Annual Meeting of the American Society of Biomechanics, pp. 119-120, Chicago, IL, July 19-22, 2000.

Lang P, Biswal S, Dillingham M, Hastie T, Alexander E, Andriacchi T, Bergman G. MRI of articular cartilage: a longitudinal study to evaluate risk factors for more rapid progression of cartilage loss. Magnetic Resonance Materials in Physics, Biology, and Medicine, Vol 8 Suppl 1, p. 21, 1999.

Andriacchi, T.P., Alexander, E.J., Hurwitz, D.: The Functional Biomechanics of the Anterior Cruciate Deficient Knee, Proceedings of the 23rd Annual Meeting of the American Society of Biomechanics, 1999.

Alexander, E.J, Andriacchi, T.P., Lang, P.K: Dynamic Functional Imaging of the Musculoskeletal System, Proceedings of the 1999 ASME Winter International Congress and Exposition, Nashville, Tennessee, November 14-19, 297-298, 1999.

Alexander, E.J, Andriacchi, T.P.: Internal to External Correspondence in the Analysis of Lower Limb Bone Motion, Proceedings of the 1999 ASME Summer Bioengineering Conference Big Sky, Montana, June 16-20, pp 415-416, 1999.

Andriacchi, TP, Alexander, EJ, Goodman, S: Understanding the Role of Functional Adaptations in Patients with Total Knee Replacements, Proceedings of the International Conference on Knee Replacements 1974 – 2024, Institute of Mechanical Engineers, 1999.

Alexander, E.J, Andriacchi, T.P.: State Estimation Theory in Human Movement Analysis, Proceedings of the 1998 ASME International Mechanical Engineering Congress BED-Vol39, pp 323-324, 1998.

Alexander, E.J, Andriacchi, T.P., Naylor, D.L.: Optimization Techniques for Skin Deformation Correction, International Symposium on 3-D Human Movement Conference, Chattanooga, TN, 104-107, 1998.

Alexander, E.J, Andriacchi, T.P.: Correcting for Deformation in Skin-Based Marker Systems, Proceedings of the 3rd Annual Gait and Clinical Movement Analysis Meeting, San Diego, CA, 1998.

Alexander EJ, Hurwitz DE, Andriacchi TP: Effect of synchronization error between force and position data in moment calculations. 2nd Annual North American Society of Gait & Clinical Movement Analysis, Gait & Posture 5(2): 177, 1997.

Alexander, E.J. and Sen, K.: A self-improving algorithm for tracking and labeling 3-D passive markers in human motion study. Proceedings 8th Annual Meeting East Coast Gait Conference, Rochester, MN., 1993.

BOOK CHAPTERS

Kumra, A., Alexander, E.J., et al,: Become the Technical Co-Founder and Do Stuff, Confessions From An Entrepreneur Vol 2: How to be a Successful College Entrepreneur, Silver Thread Publishing, 2014.

Andriacchi, T.P., Dyrby, C.O., Alexander, E.J.: Femoral Rollback is Obtainable and Beneficial in the Total Knee Patient. Controversies in Total Knee Replacement, Ed. Laskin, R.S., Oxford University Press, 2001, 95-106.

SPONSORED RESEARCH (Academic)

CISE Research Instrumentation: High-Speed Motion Acquisition

P.I.	Christoph Bregler, Ph.D.
Role	Investigator
Period	4/00 - 10/03
Salary Support	0%
Source	National Science Foundation

This is a shared instrumentation grant to support four projects requiring high-speed video recording facilities. Wrote one section of this grant application with Dr. Bregler.

Kinematic analysis of three-dimensional limb movement in dystonia

P.I.	Helen Bronte-Stewart, M.D.
Role	Investigator
Period	6/00 - 6/02
Salary Support	0%

Source Stanford BioX Interdisciplinary Initiative Program

This is a project to develop techniques to gain a better understanding of the relationships between abnormal movements and abnormal firing patterns of neurons in the basal ganglia. Co-wrote this grant application with Dr. Bronte-Stewart and Dr. Bregler.

A Probabilistic Framework for Recognizing Human Activity from Multiple Video Streams

P.I. Jitendra Malik, PhD (U.C. Berkeley)

Role Investigator

Period 5/01 - 4/04

Salary Support 10%

Source Office of Naval research, N0014-01-1-0890

This is a project to develop techniques to automatically detect and recognize human activity patterns from video streams. Wrote one section of this grant application with Dr.s Bregler and Malik

Cartilage Morphology Relative to *In Vivo* Knee Function

P.I. Thomas P. Andriacchi, Ph.D.

Role Investigator

Period 01/04 - 12/08

Salary Support 10%

Source National Institutes of Health

This is a cross-sectional study of gait patterns and their effect on cartilage morphology. Co-wrote this grant application with Dr. Andriacchi.

New Technology for the Capture, Analysis, and Visualization of Human Movement

P.I. Rama Chellappa, PhD, U Maryland

Role Investigator

Period 10/03 – 9/08

Salary Support 20%

Source National Science Foundation

This is a technology development grant for markerless human motion capture. Co-wrote the Stanford portion of this grant application with Dr. Andriacchi.

Multi-Center Gait Analysis and Functional Assessment Studies

P.I. Thomas P. Andriacchi, Ph.D.

Role Investigator

Period 10/02 - 9/04

Salary Support 50%

Source Veterans Administration

This is a technology development grant dealing with motion capture at multiple sites with different data acquisition systems and also developing markerless motion capture techniques. Co-wrote this grant application with Dr. Andriacchi.

Anterior Cruciate Ligament - Functional Biomechanics

P.I. Thomas P. Andriacchi, Ph.D.

Role Investigator

Period 7/00 - 7/04

Salary Support 30%

Source R01-AR39421-8, National Institutes of Health,

This is a study of the functional adaptations associated with ACL injury and reconstruction. Co-wrote this grant application with Dr. Andriacchi.

SPONSORED RESEARCH (Commercial)

AutoAnthro: 3D Scanning for Improved Malnutrition Assessment in Conflict Areas

P.I. Eugene J. Alexander, Body Surface Translations, \$250K (Canadian)

Period 4/19/4/20

Source Humanitarian Grand Challenges, a consortium of Grand Challenges Canada, USAID, UK FCDO, and the Ministry of Foreign Affairs of the Netherlands

The aim of this project was to begin to adapt the automated anthropometry technology for use in a humanitarian context, further develop the user-centered design to improve acceptance, speed, and effectiveness, and to further test and validate real-time results for height/length and MUAC.

Pilot testing of an innovative imaging technology for assessing child body composition

P.I. Melissa Young, Emory University \$45K

Role Investigator

Period 4/19/4/20

Source Emory University Dean's Grant

The aim of this project is to combine the automatic anthropometry system with multi-frequency bi-electrical impedance analysis and DEXA scans (as a validator) to evaluate the possibility of estimating child weight and body composition.

Automatic Anthropometry Commercialization

P.I. Eugene J. Alexander, Body Surface Translations \$300K

Role Principal Investigator

Period 10/18 – 10/19

Source Nestec S.A.

The aim of this project is to commercialize the automated quantitative assessment of anthropometric measures of children aged 0 – 7 years, to include pre-mature births.

Digital tools for anthropometric assessment

P.I. Gregg BeVier, Body Surface Translations \$1.3M

Role Lead Investigator

Period 10/18 – 10/20

Salary Support 100%

Source Bill and Melinda Gates Foundation

The aims of this project are to transition the validated techniques for anthropometric measures of children aged 0 – 5 years to a low-cost, real-time system and to scale that system up for wide-scale deployment in the developing world.

Development of an imaging system to measure children's height (length and stature) - Supplement

P.I. Gregg BeVier, Body Surface Translations \$300K
Role Lead Investigator
Period 10/17- 10/18
Salary Support 100%
Source Bill and Melinda Gates Foundation
Follow-on supplement to the grant described below.

Development of an imaging system to measure children's height (length and stature)

P.I. Gregg BeVier, Body Surface Translations \$1.0M
Role Lead Investigator
Period 11/15 - 5/17
Salary Support 100%
Source Bill and Melinda Gates Foundation

Wrote this grant with Gregg BeVier. The aims of this project are to develop new techniques for automated quantitative assessment of anthropometric measures of children aged 0 – 5 years. BST used commercial-off-the-shelf scanning technology with proprietary articulated model fitting software to produce anthropometric measures used in health monitoring.

Novel, Internet Enabled Techniques for Diagnosis and Management of Patients with Arthritis

P.I. A. Berez, Imaging Therapeutics \$1.9M
Role Investigator
Period 6/01 - 6/04
Salary Support 20%
Source Advanced Technology Program/National Institute of Standards and Technology

Wrote this grant with Daniel Steines, Philipp Lang and Tom Andriacchi. The aims of this project were to develop new techniques for automated quantitative assessment and three-dimensional visualization of cartilage degeneration due to osteoarthritis based on MR imaging and a reference database of joint motion profiles in order to improve diagnostic capability and treatment monitoring for clinicians.

TEACHING (School of Engineering, Stanford University)

Spring 2001, ME288. Biomechanical Engineering Seminar.
Fall 2000, CS/ME 448A. Experiments in Motion Capture.
Spring 2000, ME288. Biomechanical Engineering Seminar.
Winter 1999, ME288. Biomechanical Engineering Seminar.

Invited lectures:

Human Biology 97Q, Sport, Exercise, and Medicine: Exploring the Relationships
ME 381, Biomechanics of Movement
ME 281, Orthopedic Bioengineering and Medicine
CS 448C, Computer Animation

TEACHING (Argyros School of Business and Economics, Chapman University)

Spring 2015, BUS 635. Management of Entrepreneurial Enterprises
Spring 2015, Summer 2015: MGMT 437. Management of Entrepreneurial Enterprises
Spring 2014, Fall 2014, Fall 2015: MGMT 379. From idea to business – Student Incubator

TEACHING (Guest)

USC Marshall School of Business, undergraduate, graduate, executive programs, 2009 - 2016
Argyros School of Business and Economics at Chapman University in undergraduate, graduate programs, 2010 - 2015

DISSERTATION COMMITTEES

Joel Conkle, School of Global Public Health, Emory University, 2018
Ajit Chaudhari, Mechanical Engineering, Stanford, 2003
Erica Chuang, Computer Science, Stanford, 2003
James Davis, Computer Science, Stanford, 2002
Kathryn Pullen, Physics, Stanford, 2002

INVITED TALKS

“Computer Vision for Biomechanics”, University of Austin, February 27th, 2024.
“AutoAnthro, A tool for Automatic Anthropometry”, Bill and Melinda Gates Foundation, April 17, 2017.
“Automatic Anthropometry”, Chicago Council on Global Affairs Global Food Security Symposium 2017, March 29, 2017.
“Digital Imaging, Innovation, and Finding Funding”, IEEE Orange County Computer Society, Oct 2007.
“Computer Vision Approaches to Human Movement Analysis”, Georgia Institute of Technology Department of Applied Physiology, Apr 22, 2004.
“Biomechanical Factors in the Initiation and Progression of Osteoarthritis of the Knee”, University of Massachusetts Department of Mechanical and Industrial Engineering, Feb 17, 2004.
“Population Studies of Human Movement at Multiple Acquisition Sites”, Walter Reed Army Medical Center and Veterans Administration Amputee Healthcare & Prosthetics Workshop November 17 - 18, 2003.

PROFESSIONAL ACTIVITIES

Member, National Association of Scholars, 1996 – current (gaps)
Member of the UK Research and Innovation Future Fellowships Review Committee, 2020
Member of the Grant Review Committee, Bill and Melinda Gates Foundation, 2017

Founding Member, IEEE Computer Society Task Force on Game Technology, 2006
Vice-chair, IEEE Orange County GameSIG, 2006- 2010
Member of the Grant Review Committee, Netherlands Organization for Scientific Research (Veni), 2006
Member of the Program Committee, Computer Vision and Pattern Recognition Conference 2006.
Member of the Scientific Merit Review Board, Department of Veterans Affairs Rehabilitation Research and Development Service, 2004
Member of the Grant Review Committee, Department of Education, Fund for the Improvement of Post Secondary Education, 2004
Session Chair, Hot Topics, 2nd International Symposium on Ligaments and Tendons, 2002.
Session Co-Chair, Minimally Invasive Surgery, ASME 2001.

REVIEWER

Computer Vision and Pattern Recognition Conference 2001, 3, 4, 6, 7, 8
International Conference on Computer Vision 2007
Association of Computing Machinery Symp. on Solid Modeling and Applications 2004
International Journal of Computer Vision
Journal of Biomechanical Engineering
International Journal of Robotics Research
Journal of Rehabilitation Research and Development
Gait and Posture
Journal of Biomechanics
Annals of Biomedical Engineering
Transactions on Biomedical Engineering

SERVICE

Chairman of the Board, Good Dog! Autism Companions , 2011 - current
Member, Charles E. Swisher VFW Post 1924 Fallbrook, CA 2021 – current
Secretary, Lighthouse Academy (homeschool co-op), 2021-current
Member of the Board, Motion Analysis Corporation, 2016 - 2018
Managing Director, California Dreamin Equity Fund, 2015 - 2016
Member of the Board, Tech Coast Venture Network, 2013 - 2015
Member of the Board, GrandPad, 2014 - 2016

AWARDS

2006 Tech Coast Venture Network Survivor Winner; public presentation of a startup technology venture with 1-minute pitch, (60 companies), 3-minute pitch (10 companies) and finally 10 minutes of questions(3 companies).
2006 Tech Coast Angels Fast Pitch, Best Presentation
2001 Finalist, Best Paper, Gait and Clinical Movement Analysis Meeting 2001.
1998 Finalist, Best Paper, Gait and Clinical Movement Analysis Meeting 1998.

- 1993 Department of Education Microelectromechanical Systems Fellowship.
- 1990 Department of Electrical Engineering/Computer Science, University of Illinois, Merit Scholar.
- 1980 Illinois State Scholar.
- 1980 National Merit Scholarship Competition, Semi-Finalist.