

Filed on behalf of ABB, Inc.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ABB, INC.
Petitioner

v.

ROY-G-BIV CORPORATION
Patent Owner

Trial No. IPR2013-00062 (joined with IPR2013-00282)
Patent 6,516,236 B1

DECLARATION OF RICHARD VOYLES, PH.D.
PURSANT TO 37 CFR § 42.53

ABB v ROY-G-BIV
TRIAL IPR2013-00062
TRIAL IPR2013-00282
ABB - EXHIBIT 1130

I, Richard Voyles, Ph. D., declare as follows:

1. I am currently employed by the College of Technology at Purdue University as Associate Dean for Research. I have been a professor at Purdue University since July of 2013 and was previously a tenured associate professor of robotics and mechatronics at the University of Denver (2006 – 2013) and a tenured associate professor of computer science at the University of Minnesota (1997 – 2007). Over the past three years I have been concurrently serving as a “rotator” at the National Science Foundation in the capacity of lead Program Director for the National Robotics Initiative (NRI) in the Computer and Information Science and Engineering directorate. The NRI is a multi-agency initiative of the federal government and I have been leading it since it was announced by President Obama in June of 2011. This fall, I plan to transition to the Office of Science and Technology Policy to assume the position of Assistant Director for Robotics and Cyber-Physical Systems (concurrent with my role at Purdue). A copy of my c.v. is attached at the end of this declaration.
2. In 1997, I received my Ph.D. in Robotics from Carnegie Mellon University. My thesis, supervised by Prof. Pradeep Khosla, was entitled “Toward Gesture-Based Programming: Agent-Based Haptic

- Skill Acquisition and Interpretation” and focused on a method for programming robots by human demonstration, rather than explicit programming of software code. Instead, a computer system would extract the intention of the human user by observing a physical demonstration of the desired task through a variety of sensors and build software from existing primitives (by the Morrow definition) to autonomously execute the learned program. My work focused on tactile sensors, force sensors, and various sensors of motion control, rather than computer vision. (Sing Bing Kang and Brad Nelson were working on vision problems in the lab.)
3. I made extensive use of Chimera and Onika during my time in the lab and the demonstration of my thesis work used the tools provided by David Stewart and Dan Morrow, as well as my own software code.
 4. In 1989, I received my M.S. in Manufacturing Systems Engineering from the Mechanical Engineering Department of Stanford University, during which I worked in the robotics lab of Oussama Khatib. My B.S. in Electrical Engineering was received in 1983 from Purdue University in West Lafayette, IN where I worked in the robotics lab of Richard Paul.

5. Over the last 30 years, my research and teaching work has focused on robotics, real-time systems, mechatronics, computer engineering, sensors, artificial intelligence and cyber-physical systems. As part of my research work since graduating from Carnegie Mellon, I have developed a software package called “PBO/RT” (Port-Based Objects/Real-Time) which is a direct descendant of Chimera 3.
6. Interspersed with my research and teaching experience over the past 30 years, I have also gained significant experience in nearly all aspects of the commercial motion control sector as employee and entrepreneur . I have worked on the design and manufacture of low-level motor controllers, the development of multi-axis motion controllers, the development and application of hardware/software systems for the rapid prototyping of real-time motion control solutions, and the integration of robotic manipulators into assembly lines.

Assignment and Compensation

7. I submit this declaration to oppose the Patent Owner’s Responses filed by RGB in the *Inter Partes* Review of U.S. Patent No. 5,516,236 (“the ’236 patent”), which includes Trial Nos. IPR2013-0062 and IPR2013-00282.

8. I am not an employee of Petitioner ABB or any affiliate or subsidiary thereof.
9. I am being compensated for my time at my usual consulting rate of \$500 per hour. My compensation is not dependent upon the substance of my testimony, or upon the outcome of this proceeding.
10. I have been retained by ABB, Inc. to review and discuss certain factual events relating to research that was conducted at Carnegie Mellon University's Advanced Manipulators Lab. I have also been asked to provide opinions regarding the testimony of David Stewart, Ph.D. that has been given in this proceeding.

Materials Reviewed

11. In preparing this declaration, I have reviewed ABB's Petition for *Inter Partes* Review, ABB's 2nd Petition for *Inter Partes* Review, PTAB Decisions Instituting Trial on claim 1-10, the Patent Owner's Responses, Declaration of David Stewart, Ph. D. (and his Supplemental Declaration), Declaration of David Brown, Deposition Transcript of David Stewart, and the prior art that has been cited against the claims.
12. I have further relied on a number of contemporaneous documents that reflect the state of the art prior to July 10, 1994, the research being

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