

Figure 2.2: The Challenge of Building a Team and an ROV

Participating in a competition encourages students to develop both technical and teamwork skills.

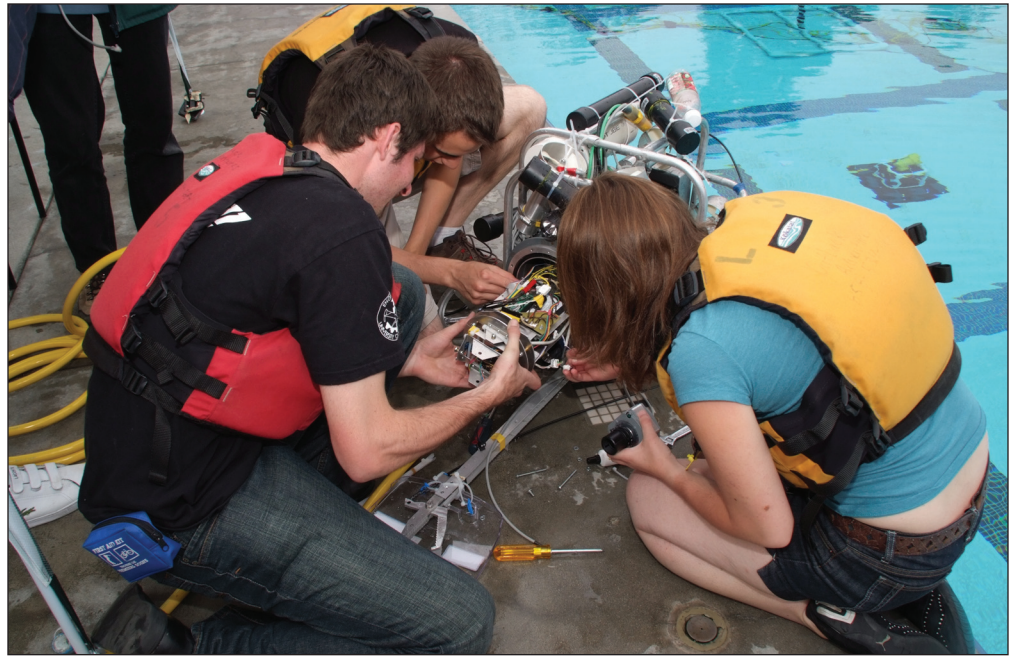


Image courtesy of Steve Van Meter, VideoRay LLC

1. Introduction

People get into ROV and AUV projects for many different reasons; furthermore, they come from a variety of backgrounds and experiences. Some are students building an ROV for a competition. Some are teachers exploring new ways to make their classes more fun and more valuable for their students. Some are technology enthusiasts who want to try something new. Regardless of motivation, anyone undertaking an underwater vehicle design project will encounter similar issues and challenges.

The first half of this chapter outlines the major challenges you are likely to face when undertaking an underwater vehicle project. It also provides a “toolkit” of pragmatic strategies you can rely on to overcome those challenges and keep your project on track. The latter half of the chapter is devoted to a detailed case study of a real ROV project successfully completed by a group of community college students. This example not only outlines the sequence of stages necessary to complete an underwater vehicle project, but also illustrates application of the strategies introduced earlier in the chapter.

This chapter provides a way to organize your thinking, planning, designing, and construction when building an underwater robot. It provides the theory you’ll put into practice in *Chapter 12: SeaMATE*, which takes you step by step through building an actual shallow-diving ROV. In between these two important chapters—one on design and one with actual fabrication instructions—are a series of technical chapters that provide greater detail about important issues of buoyancy, power, control, etc., as they relate to underwater craft. Note that this textbook is designed for individual flexibility—you may choose to read it straight through, then begin building *SeaMATE* or another vehicle. Or you may choose to build various ROV systems as you study particular technical chapters. For example, you can build the frame while studying *Chapter 4: Structure and Materials* or work on thrusters while reading *Chapter 7: Moving and Maneuvering*. The choice is up to you. Once you have completed *SeaMATE*, you should have enough learning and confidence under your belt to begin more advanced projects—which brings you full circle back to the planning and organizational theory of this chapter. That’s the way it is with underwater robots—and underwater robot textbooks—everything is interrelated!