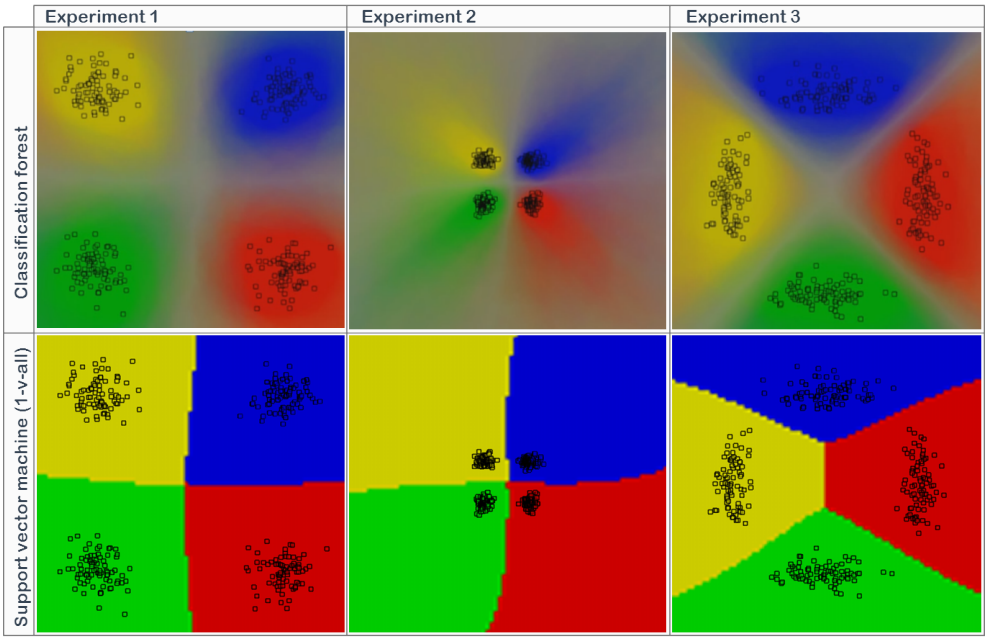

Fig. 3.14: **Comparison between classification forests and support vector machines.** All forest experiments were run with $D = 3$, $T = 200$ and conic weak learner. The SVM parameters were optimized to achieve best results.

and both forests and SVMs achieve good separation results. However, forests also produce uncertainty information. Probabilistic SVM counterparts such as the relevance vector machine [93] do produce confidence output but at the expense of further computation.

The role of good confidence estimation is particularly evident in fig. 3.14b where we can see how the uncertainty increases as we move away from the training data. The exact shape of the confidence region is dictated strongly by the choice of the weak learner model (conic section in this case), and a simple axis-aligned weak learner would produce inferior results. In contrast, the SVM classifier assigns a hard output class value to each pixel, with equal confidence.

Unlike forests, SVMs were born as two-class classifiers, although