In this talk I will describe recent progress made with V. Bergelson on recurrence and multiple recurrence for $\mathbb{Z}^d$ actions along intersective polynomials - polynomials having a common root modulo any congruence. Specifically, I will describe new collections of intersective polynomials for which multiple recurrence is known to hold, and a strengthening of the structure of single recurrence times along an intersective polynomial. (Received August 23, 2015)