The thesis, after a small parade of classic results of Analytic Number Theory (Chap.1) and a sprinkle of literature on additive/multiplicative problems (Chapp.2/3), together with a bit of standard techniques of Sieves, Exponential Sums and Bilinear Forms/Kloosterman Sums (Chap.4), treats (in Chapter 5) some additive and multiplicative problems in Short Intervals $[x-h, x+h]$ (i.e., $h = h(x)$ is an increasing and unbounded function of x and $h = o(x)$, when $x \to \infty$).

The first problem (§5.2) is the study of the classic Selberg integral (results in two papers with A.Vitolo) through the mean-square of an error term in an explicit formula of the Riemann-von Mangoldt type (first paper with M.B.S.Laporta, on Note di Matematica), regarding the "symmetry" of primes in almost all the short intervals.

Actually, this symmetry is strictly linked to the second problem (§5.3) regarding the representation of an even positive integer, say $2x$, as a sum of two primes, say p, q, that are almost equal, i.e. $|p-q|$ is small w.r.t. p (or q) : $2x = p+q$ (Goldbach problem with almost equal primes, second paper with M.B.S.Laporta, on Rend. Sem. Mat. Pol. Torino), being $2x-p$ prime for p prime (see that $2x-p$ is the symmetric of p w.r.t. x).

Finally, we apply different techniques in order to estimate the reducible polynomial $n(n+2)$ with $n \in [x, x+h]$ (in short intervals) in the arithmetic progressions modulo a product of two primes (§5.4, with the Large Sieve, §5.5, with the Dispersion method and §5.6, applying Kloosterman sums bilinear forms bounds). This problem has been studied in a series of papers (with S.Salerno, "On the distribution in the arithmetic progressions of reducible quadratic polynomials in short intervals", I, II, III).