India is expected to become the world’s youngest country by 2020, and the most populous by 2028. To leverage this demographic advantage and drive economic development, millions of young men and women need to be trained and gainfully employed in the coming years. The government has set a target of training 300M people by 2022 in various roles and across a variety of sectors. A number of initiatives have been launched to enhance training capacity and to provide financial assistance to people to enroll in skill development programs and improve their employability. However, due to lack of effective counseling facilities, it remains very difficult for people – especially those growing up in small towns and rural areas across the country – to access this information in systematic and consumable ways, understand the variety of opportunities that exist with respect to roles, training programs and jobs, and determine specific actions they need to take to meet their personal career aspirations. As a result, they may end up making various sub-optimal training and career choices or continue to take up low-skilled jobs mostly in the unorganized sector. The absence of a large and highly skilled workforce can slow down or even derail a nation’s economic development and the demographic dividend can over time, turn into a burden.

The situation is not unique to India, but also prevalent in many emerging economies around the world, with large youthful populations reaching working age in the coming decades. In addition, existing workforces often need to be re-skilled in new domains due to technology shifts and new market forces. In all such cases, individuals would benefit from personalized career guidance that is based on deep insights drawn from real market data, personalized to the needs, interests and constraints of each individual. Other key stakeholders such as government agencies/policy makers, industry bodies, financial institutions, content providers, training and certification agencies, employers etc. would also derive value from insights on skill availability, skill demand, training quality, etc. so that investments can be suitably channelized and the effectiveness of overall eco-system can be monitored and optimized with time.

Towards this end, at IBM Research – India, we are developing a suite of personalized skill and career counseling services that can help a candidate (or a human counselor for the candidate) explore suitable roles, skill development needs and job opportunities, through a set of inter-linked recommendations that leverage deep analytics on relevant eco-system data. Specifically, the recommendations include:

1. Career roles from different industries/sectors that best match the candidate’s current profile and interests. At present, roles aligned with the qualification packs from the National Skill Development Corporation (NSDC) in India are supported, although this can be extended to other career frameworks as needed.
2. Job opportunities that are currently available for a recommended role
3. Key new functional and technical skills the candidate needs to acquire to enhance his/her suitability for a given role and/or job opportunity, as well as a ranked list of institutes that can impart such training
4. Mentors (qualified volunteer for a role/career) who can coach the candidate

Recommendations take into account a candidate’s overall profile (education, experience and skills), career interests/preferences, as well as geographic location (e.g. proximity to training institutes or jobs). They leverage natural language processing techniques on unstructured text (e.g. role/job descriptions), and advanced matching algorithms (e.g. similarity with other candidates who are employed, or affinity with potential mentors). For a selected role from the recommended list, the candidate can explore subsequent roles in that career path to understand growth opportunities. For a given recommended role or job, the candidate is provided with a fit gap view (in terms of education, experience or skills) and statistical insights in terms of available jobs and salary range, when available. Thus a candidate can have clear understanding of his/her fitment and gaps towards a target career role or a job, a consolidated list of skills that s/he needs to acquire, and long term outlook from a career growth perspective.

Going forward, we intend to develop a suite of eco-system insight services for other stakeholders (e.g. government agencies, training institutions, employers) that can provide the foundation for informed decision-making.