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@articleparraghsurvey2008, title = A survey on pickup and delivery problems: Part II: Transportation between pickup and delivery locations, volume = 58, shorttitle = A survey on pickup and delivery problems, doi = 10.1007/s11301-008-0036-4, abstract = This paper is the second part of a comprehensive survey on routing problems involving pickups and deliveries. Basically, two problem classes can be distinguished. The first part dealt with the transportation of goods from the depot to linehaul customers and from backhaul customers to the depot. The second part now considers all those problems where goods are transported between pickup and delivery locations, denoted as Vehicle Routing Problems with Pickups and Deliveries (VRPPD). These are the Pickup and Delivery Vehicle Routing Problem (PDVRP unpaired pickup and delivery points), the classical Pickup and Delivery Problem (PDP paired pickup and delivery points), and the Dial-A-Ride Problem (DARP passenger transportation between paired pickup and delivery points and user inconvenience taken into consideration). Single as well as multi vehicle mathematical problem formulations for all three VRPPD types are given, and the respective exact, heuristic, and metaheuristic solution methods are discussed., journal = Journal fr Betriebswirtschaft, author = Parragh, Sophie and Doerner, Karl and Hartl, Richard, month = jun, year = 2008, pages = 81–117

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@articledelhommecomparing2016, title = Comparing French carpoolers and non-carpoolers: Which factors contribute the most to carpooling?, volume = 42, issn = 1361-9209, shorttitle = Comparing French carpoolers and non-carpoolers, url = http://www.sciencedirect.com/science/article/pii/S1361920915001741, doi = 10.1016/j.trd.2015.10.014, abstract = Carpooling is an effective solution to major environmental problems but it is insufficiently used, particularly in France. In order to increase carpooling, it is important to understand why people do or not carpool. This study, carried out a large sample of drivers, was aimed at (1) identifying whether or not people carpool, (2) investigating the factual data (e.g. socio-demographics, transportation accessibility) and motivational factors (e.g. attitudes regarding car use, public transportation, environment) upon which carpoolers and non-carpoolers differ, and (3) highlighting the main determinants of the practice of carpooling. An online survey was administered to 1207 French drivers (48% men, ages 1987) recruited by means of a random-quota method. In our sample, 52.5% of the participants said they were using carpooling. Carpoolers and non-carpoolers were similar in terms of kilometers driven per year, distance to their workplace or schools/universities, and public transportation accessibility. Compared to non-carpoolers, carpoolers were more likely to be women, have children, have positive attitudes toward public transport,

and be more environmentally aware. These results suggest various different strategies for increasing the number of carpoolers and the frequency of carpooling use by taking into account the gender of road users., urldate = 2018-05-31, journal = Transportation Research Part D: Transport and Environment, author = Delhomme, Patricia and Gheorghiu, Alexandra, month = jan, year = 2016, keywords = Car-use attitude, Carpooling, Environmental attitude, Environmental problems, Public transportation attitude, pages = 1–15 @bookguometaheuristics2012, title = Metaheuristics for solving large size long-term car pooling problem and an extension, url = http://www.theses.fr/2012ARTO0206, abstract = La dispersion spatiale de l'habitat et des activites de ces dernieres decennies a fortement contribue un allongement des distances et des temps de trajets domicile-travail. Cela a pour consequence un accroissement de l'utilisation des voitures particulieres, notamment au sein et aux abords des grandes agglomerations. Afin de reduire les impacts dus l'augmentation du trafic routier, des services de covoiturage, o des usagers ayant la meme destination se regroupent en equipage pour se deplacer, ont ete mis en place partout dans le monde. Nous presentons ici nos travaux sur le probleme de covoiturage regulier. Dans cette these, le probleme de covoiturage regulier a ete modelise et plusieurs metaheuristiques de resolution ont ete implementees, testees et comparees. La these est organisee de la faon suivante: tout d'abord, nous commenons par presenter la definition et la description du probleme ainsi que le modele mathematique associe. Ensuite, plusieurs metaheuristiques pour resoudre le probleme sont presentees. Ces approches sont au nombre de quatre: un algorithme de recherche locale voisinage variable, un algorithme base de colonies de fourmis, un algorithme genetique guidee et un systeme multi-agents genetiques auto-adaptatif. Des experiences ont ete menees pour demontrer l'efficacite de nos approches. Nous continuons ensuite avec la presentation et la resolution d'une extension du probleme de covoiturage occasionel comportant plusieurs destinations. Pour terminer, une plate-forme de test et d'analyse pour evaluer nos approches et une plate-forme de covoiturage sont presentees dans l'annexe., urldate = 2018-05-31, publisher = Artois, author = Guo, Yuhan, month = nov, year = 2012 @articlelaucontributions2008, title = Contributions of roadside vehicle emissions to general air quality in Hong Kong, volume = 13, issn = 1361-9209, url = http://www.sciencedirect.com/science/article/pii/S1361920907001150, doi = 10.1016/j.trd.2007.10.004, abstract = Data for 7-year from three roadside, three urban background, and one rural monitoring stations are employed to look at the contribution of roadside vehicle emissions to the general air quality in central Hong Kong. It is found that within the urban core of Hong Kong, variations in concentrations of various gaseous pollutants are heavily influenced by variations in local traffic volume. The daily patterns of NO_2, NO_x, and particulates concentrations at roadside and background stations are similar while no common daily concentration pattern of SO_2 can be found. Concentration at nearby roadside and background stations are closely correlated for all pollutants investigated. Daily variations of NO_2, NO_x, and particulates concentrations at roadside and urban background stations follow the traffic pattern of the area closely. Similarities exist between traffic volume and SO_2 concentration, but they are less clear. For each of the pollutants, traffic volume and concentration in the urban background are positively correlated., number = 1, urldate = 2018-05-31, journal = Transportation Research Part D: Transport and Environment, author = Lau, J. and Hung, W. T. and Cheung, C. S. and Yuen, D., month = jan, year = 2008, keywords = Background air quality, Local pollution source, Urban centre area, Vehicle emission, pages = 19–26 @miscstradeterminants2007, title = Determinants of Car Dependence Threats from Car Traffic to the Quality of Urban Life, url = https://www-emeraldinsight-com.gaelnomade-2.grenet.fr/doi/abs/10.1108/9780080481449-010, urldate = 2018-05-31, author = Stephen Stradling, year = 2007 @articlewohlmethodology1970, title = A METHODOLOGY FOR FORECASTING PEAK AND OFF-PEAK TRAVEL VOLUMES, url = https://trid.trb.org/view/134292, number = 322, urldate = 2018-06-01, journal = Highway Research Record, author = Wohl, Martin, year = 1970 @articlesagnerimpact1974, title = The impact of the energy crisis on American cities based on dispersion of employment, utilization of transit, and car pooling, volume = 8, issn = 0041-1647, url = http://www.sciencedirect.com/science/article/pii/0041164774900495, doi = 10.1016/0041-1647(74)90049-5, abstract = The impact of the energy crisis on transportation within selected American cities is analyzed. Using Journey to Work data from the 1970 U.S. Census of Population, changes are estimated in car pooling and in the use of alternative transportation modes for commutation travel. Suggestions are provided for the analysis of specific cities, and transportation planning in the Baltimore, Maryland, area is reviewed in some depth. Conclusions are drawn that, on average, limited energy shortfalls (of approximately 10 per cent) should have no severe adverse impact on commutation activity Resume On a analyse les effects de la crise de l'energie sur les transports, dans quelques villes americaines. Sur la base des donnees relatives aux

deplacements pour se rendre au travail resultant du recensement de la population des Etats-Unis en 1970, on a estime les variations dans l'utilisation en commun des voitures particulieres et de l'utilisation des divers modes de transport pour les trajets entre le lieu de travail et le domicile. On offre des suggestions pour l'analyse de villes particulieres et la planification des transports aux alentours de Baltimore, Maryland, est examinee en detail. On a conclu qu'en moyenne un manque d'energie limite (de l'ordre de 10 pour cent) ne devrait pas affecter les transports entre le lieu de travail et le domicile. Zusammenfassung Die Auswirkungen der Energiekrise auf das Verkehrsgeschehen in ausgewhlten amerikanischen Stdten werden untersucht. Auf der Basis von Fahrtenzahlen im Berufspendlerverkehr, die aus der Volkszhlung 1970 stammen, lieen sich Vernderungen bei den Fahrgemeinschaften und in der Benutzung alternativer Verkehrsmittel abschtzen. Fr Analysen in bestimmten Stdten werden Vorschlge entwickelt; insbesondere wird die Verkehrsplanung fr das Gebiet von Baltimore, Maryland, kritisch beleuchtet. Allgemein lt sich feststellen, da begrenzte Energieverknappungen (etwa von 10 Prozent) nicht zu ernsthaften Beeintrchtigungen des Pendlerverkehrs fhren drften., number = 4, urldate = 2018-06-01, journal = Transportation Research, author = Sagner, James S., month = oct, year = 1974, pages = 307–316 @articlekotharigenghis-multiagent2004, title = Genghis-a multiagent carpooling system, journal = Bath: Department of Computer Science, University of Bath, author = Kothari, Amit B., year = 2004 @articlecalvodistributed2004, title = A distributed geographic information system for the daily car pooling problem, volume = 31, number = 13, journal = Computers & Operations Research, author = Calvo, Roberto Wolfler and de Luigi, Fabio and Haastrup, Palle and Maniezzo, Vittorio, year = 2004, pages = 2263–2278 @articleberlingeriograal2017, title = The GRAAL of carpooling: GReen And sociAL optimization from crowd-sourced data, volume = 80, issn = 0968-090X, shorttitle = The GRAAL of carpooling, url = http://www.sciencedirect.com/science/article/pii/S0968090X17300657, doi = 10.1016/j.trc.2017.02.025, abstract = Carpooling, i.e. the sharing of vehicles to reach common destinations, is often performed to reduce costs and pollution. Recent work on carpooling takes into account, besides mobility matches, also social aspects and, more generally, non-monetary incentives. In line with this, we present GRAAL, a data-driven methodology for GReen And sociAL carpooling. GRAAL optimizes a carpooling system not only by minimizing the number of cars needed at the city level, but also by maximizing the enjoyability of people sharing a trip. We introduce a measure of enjoyability based on peoples interests, social links, and tendency to connect to people with similar or dissimilar interests. GRAAL computes the enjoyability within a set of users from crowd-sourced data, and then uses it on real world datasets to optimize a weighted linear combination of number of cars and enjoyability. To tune this weight, and to investigate the users interest on the social aspects of carpooling, we conducted an online survey on potential carpooling users. We present the results of applying GRAAL on real world crowd-sourced data from the cities of Rome and San Francisco. Computational results are presented from both the city and the user perspective. Using the crowd-sourced weight, GRAAL is able to significantly reduce the number of cars needed, while keeping a high level of enjoyability on the tested data-set. From the user perspective, we show how the entire per-car distribution of enjoyability is increased with respect to the baselines., urldate = 2018-06-01, journal = Transportation Research Part C: Emerging Technologies, author = Berlingerio, Michele and Ghaddar, Bissan and Guidotti, Riccardo and Pascale, Alessandra and Sassi, Andrea, month = jul, year = 2017, keywords = Carpooling, Multi-objective optimization, Social networks, User study, pages = 20–36 @miscnoauthorblablalines2017, title = #Covoiturage domicile-travail BlaBlaLines arrive Paris et en Ile-de-France, url = https://www.entreprises.cci-paris-idf.fr/web/cci75/covoiturage-nous-lancons-blablalines-en-ile-de-france-frederic-mazzella-blablacar, urldate = 2018-05-25, year= 2017, author = Web @miscARNULFKlaxit2018, title = Covoiturage domicile/travail : Klaxit (ex-Wayzup) embarque de nouveaux partenaires pour se detacher, author = SYLVAIN ARNULF, year= 2018, shorttitle = Covoiturage domicile/travail, url = https://www.usine-digitale.fr/article/covoiturage-domicile-travail-klaxit-ex-wayzup-embarque-de-nouveaux-partenaires-pour-se-detacher.N650114, abstract = La Maif et Sodexo rejoignent la RATP au capital de la start-up française Klaxit, à l’occasion d’une levée de fonds de 3 millions d’euros. Le spécialiste du covoiturage domicile/travail mise sur les partenariats avec les entreprises pour s’imposer., urldate = 2018-05-25, journal = usine-digitale.fr @miscnoauthorkaros2016, title = Karos, comment a marche ? - Le Parisien, urldate = 2018-05-25, year= 2016, url = http://www.leparisien.fr/espace-premium/seine-et-marne-77/karos-comment-ca-marche-07-07-2016-5947231, author = Web @miscnoauthorgreve2018, title = Covoiturage gratuit en ile-de-France pendant les jours de greve !, url = https://www.iledefrance-mobilites.fr/actualites/covoiturage-gratuit-franciliens-

pendant-jours-de-greve, abstract = En prevision des prochaines perturbations (...) Mise en place de la gratuite du covoiturage pendant les jours de greve. Si vous etes conducteur : 9 plateformes de covoiturage partenaires : Karos, Klaxit, IDVROOM, BlaBlaLines, Ouihop, Roulez Malin, Citygoo, Covoitici, Clem, et vous serez rembourse. Si vous etes voyageur : application Vianavigo et site internet Vianavigo, language = fr-FR, urldate = 2018-06-01, author = Web, year = 2018, journal = ile-de-France Mobilites @misc-noauthoroccupancy2008, type = Indicator Assessment, title = Occupancy rates of passenger vehicles, url = https://www.eea.europa.eu/data-and-maps/indicators/occupancy-rates-of-passenger-vehicles/occupancy-rates-of-passenger-vehicles, abstract = Passenger car occupancy is falling in countries where data is available, but the rate of decline has slowed in recent years. Occupancy rates for air transport have been rising steadily. Rail and bus occupancy rate data is scarce and trends are inconclusive., language = en, year = 2008, author = Web, urldate = 2018-06-01, journal = European Environment Agency @articlehuangmodels2000, title = The models and economics of carpools, volume = 34, issn = 0570-1864, 1432-0592, url = https://link-springer-com.gaelnomade-2.grenet.fr/article/10.1007/s001680050126, doi = 10.1007/s001680050126, abstract = . For studying carpooling problems, this paper presents two models, namely deterministic and stochastic, and gives the economic explanations to the model solutions. We investigate the jockeying behavior of work commuters between carpooling and driving alone modes through solving each model for both no-toll equilibrium and social optimum. The logit-based stochastic model involves the consideration on preference option of mode choice. Under some assumptions, the paper explains how the amount of carpooling is affected by fuel cost, assembly cost, value of time, preferential or attitudinal factors and traffic congestion. It is found that carpooling is sensitive to traffic congestion reduction only when a congestion externality-based tolling scheme is implemented., language = en, number = 1, urldate = 2018-06-01, journal = Ann Reg Sci, author = Huang, Hai-Jun and Yang, Hai and Bell, Michael G. H., month = mar, year = 2000, pages = 55–68 @bookonwubolunew2004, address = Berlin Heidelberg, series = Studies in Fuzziness and Soft Computing, title = New Optimization Techniques in Engineering, isbn = 978-3-540-20167-0, url = //www.springer.com/la/book/9783540201670, abstract = Presently, general-purpose optimization techniques such as Simulated Annealing, and Genetic Algorithms, have become standard optimization techniques. Concerted research efforts have been made recently in order to invent novel optimization techniques for solving real life problems, which have the attributes of memory update and population-based search solutions. The book describes a variety of these novel optimization techniques which in most cases outperform the standard optimization techniques in many application areas. "New Optimization Techniques in Engineering" reports applications and results of the novel optimization techniques considering a multitude of practical problems in the different engineering disciplines presenting both the background of the subject area and the techniques for solving the problems., language = en, urldate = 2018-06-01, publisher = Springer-Verlag, author = Onwubolu, Godfrey C. and Babu, B. V., year = 2004, pages = 420,430 @articleyanoptimization2011, title = An optimization model and a solution algorithm for the many-to-many car pooling problem, volume = 191, issn = 0254-5330, 1572-9338, url = https://link-springer-com.gaelnomade-2.grenet.fr/article/10.1007/s10479-011-0948-6, doi = 10.1007/s10479-011-0948-6, abstract = Car pooling is one method that can be easily instituted and can help to resolve a variety of problems that continue to plague urban areas, ranging from energy demands and traffic congestion to environmental pollution. Although car pooling is becoming more common, in practice, participant matching results are still being obtained by an inefficient manual approach, which may possibly result in an inferior solution. In the past, when car pooling studies have been done the problem has been treated as either a to-work problem (from different origins to the same destination) or return-from-work problem (from the same origin to different destinations). However, in this study we employ a time-space network flow technique to develop a model for the many-to-many car pooling problem with multiple vehicle types and person types. The model is formulated as an integer multiple commodity network flow problem. Since real problem sizes can be huge, it could be difficult to find optimal solutions within a reasonable period of time. Therefore, we develop a solution algorithm based on Lagrangian relaxation, a subgradient method, and a heuristic for the upper bound solution, to solve the model. To test how well the model and the solution algorithm can be applied to real world, we randomly generated several examples based upon data reported from a past study carried out in northern Taiwan, on which we performed numerical tests. The test results show the effectiveness of the proposed model and solution algorithm., language = en, number = 1, urldate = 2018-06-01, journal = Ann Oper Res, author = Yan, Shangyao and Chen, Chun-Ying, month = nov, year = 2011, pages = 37–71 @articlebruglieripoliunipool:2011, series = The

State of the Art in the European Quantitative Oriented Transportation and Logistics Research 14th Euro Working Group on Transportation & 26th Mini Euro Conference & 1st European Scientific Conference on Air Transport, title = PoliUniPool: a carpooling system for universities, volume = 20, issn = 1877-0428, shorttitle = PoliUniPool, url = http://www.sciencedirect.com/science/article/pii/S187704281101442X, doi = 10.1016/j.sbspro.2011.08.062, abstract = Carpooling is a transport system based on a shared use of private cars. The mobility managers of the Universit Statale and Politecnico di Milano universities are interested in promoting the use of such system among their students and employees. The paper presents an ongoing project to design, implement and test PoliUniPool, a car pooling service for such universities. The main characteristics of the PoliUniPool service are the following: (1) the use of the system is restricted to employees, faculty and students of the two universities; (2) besides suggesting a matching between the users, the system provides the expected schedule for their trips; (3) in addition to the campus premises, users can select as destination of their car pooling trips the main railway and subway stations, in order to encourage the most environmental friendly means; (4) users are informed immediately in case of delay or changes, to improve the reliability of the service; (5) the system estimates the costs for each user, in order to let the users know how to share them; (6) the system has some social network functionalities, e.g. drivers are able to set partial pre-arranged crews; and users may indicate other users they would prefer to car-pool with (friends) or they dont want to (I dont like him/her). A web-based software tool has been implemented to manage the matching of the users. In order to solve the carpooling problem, we use an heuristics, based on a guided Monte Carlo method. The algorithm minimizes an objective function, subject to user time windows and car capacity constraints. The objective function is a weighted sum of different terms in order to maximize the number of served users, minimizing the total route length, and maximizing the satisfied user preferences (e.g. friends). The result is a matching between drivers and passengers, their schedules and the routes to be driven by each driver. The trial of the proposed service will start on September 2011 and will take into account how to introduce and promote the service, identifying regulation, incentives, modalities, and marketing actions., urldate = 2018-05-31, journal = Procedia - Social and Behavioral Sciences, author = Bruglieri, Maurizio and Ciccarelli, Diego and Colorni, Alberto and Lue, Alessandro, month = jan, year = 2011, keywords = carpooling, multi-objective optimization, travel demand management measures, pages = 558–567 @miscnoauthorpoliunipool:nodate, title = PoliUniPool: A carpooling system for... (PDF Download Available), url = https://www.researchgate.net/publication/251713181PoliUniPoolAcarpoolingsystemforuniversities, urldate = 2018-06-01 @articlenanrysolving2000, title = Solving the pickup and delivery problem with time windows using reactive tabu search, volume = 34, issn = 0191-2615, doi = 10.1016/S0191-2615(99)00016-8, abstract = The pickup and delivery problem with time windows requires that a group of vehicles satisfy a collection of customer requests. Each customer request requires the use of a single vehicle both to load a specified amount of goods at one location and to deliver them to another location. All requests must be performed without violating either the vehicle capacity or the customer time window stipulated at each location. In this paper, we present a reactive tabu search approach to solve the pickup and delivery problem with time windows using three distinct move neighborhoods that capitalize on the dominance of the precedence and coupling constraints. A hierarchical search methodology is used to dynamically alternate between neighborhoods in order to negotiate different regions of the solution space and adjust search trajectories. In order to validate our technique's effectiveness, we have constructed a new set of benchmark problems for the pickup and delivery problem with time windows based on Solomon's benchmark vehicle routing problem with time windows data sets. Computational results substantiate the solution quality and efficiency of our reactive tabu search approach., number = 2, urldate = 2018-06-01, journal = Transportation Research Part B: Methodological, author = Nanry, William P and Wesley Barnes, J, month = feb, year = 2000, keywords = Benchmark problems, Coupling constraints, Neighborhood selection, Tabu search, url = http://www.sciencedirect.com/science/article/pii/S0191261599000168, pages = 107–121 @articlebenttwostage2006, series = Part Special Issue: Optimization Days 2003, title = A two-stage hybrid algorithm for pickup and delivery vehicle routing problems with time windows, volume = 33, issn = 0305-0548, url = http://www.sciencedirect.com/science/article/pii/S0305054804001911, doi = 10.1016/j.cor.2004.08.001, abstract = This paper presents a two-stage hybrid algorithm for pickup and delivery vehicle routing problems with time windows and multiple vehicles (PDPTW). The first stage uses a simple simulated annealing algorithm to decrease the number of routes, while the second stage uses Large neighborhood search (LNS) to decrease total travel cost. Experimental results show the effectiveness of the algorithm which has produced

many new best solutions on problems with 100, 200, and 600 customers. In particular, it has improved 47% and 76% of the best solutions on the 200 and 600-customer benchmarks, sometimes by as much as 3 vehicles. These results further confirm the benefits of two-stage approaches in vehicle routing. They also answer positively the open issue in the original LNS paper, which advocated the use of LNS for the PDPTW and argue for the robustness of LNS with respect to side-constraints., number = 4, urldate = 2018-06-01, journal = Computers & Operations Research, author = Bent, Russell and Hentenryck, Pascal Van, month = apr, year = 2006, pages = 875–893 @articlecorreiaconceptual2009, title = A conceptual model for carpooling systems simulation, volume = 3, issn = 1747-7778, 1747-7786, url = https://link-springer-com.gaelnomade-2.grenet.fr/article/10.1057/jos.2008.4, doi = 10.1057/jos.2008.4, abstract = Growing traffic congestion and the associated externalities require the study of alternative measures to reduce the number of automobiles travelling every day to the city centres, specifically single-occupant vehicles. Carpooling is a system by which a person shares his or her private vehicle with one or more people that have similar destinations. A conceptual model for carpooling simulation is presented to study the viability of carpooling clubs in a given region. Based on statistical data from single-occupant commuter trips and using roulette wheel selection, one aims to simulate the behaviour of potential carpooling users. This paper emphasizes the construction process of a Logic Flow Diagram that translates the proposed methodology, allowing organizing the different activities, input parameters and discrete events in a structure that can be used to study any given urban area., language = en, number = 1, urldate = 2018-06-01, journal = J Simulation, author = Correia, G. and Viegas, J. M., month = mar, year = 2009, pages = 61–68 @articlepolacekvariable2004, title = A Variable Neighborhood Search for the Multi Depot Vehicle Routing Problem with Time Windows, volume = 10, issn = 1381-1231, 1572-9397, url = https://link-springer-com.gaelnomade-2.grenet.fr/article/10.1007/s10732-005-5432-5, doi = 10.1007/s10732-005-5432-5, abstract = The aim of this paper is to propose an algorithm based on the philosophy of the Variable Neighborhood Search (VNS) to solve Multi Depot Vehicle Routing Problems with Time Windows. The paper has two main contributions. First, from a technical point of view, it presents the first application of a VNS for this problem and several design issues of VNS algorithms are discussed. Second, from a problem oriented point of view the computational results show that the approach is competitive with an existing Tabu Search algorithm with respect to both solution quality and computation times., language = en, number = 6, urldate = 2018-06-01, journal = J Heuristics, author = Polacek, Michael and Hartl, Richard F. and Doerner, Karl and Reimann, Marc, month = dec, year = 2004, pages = 613–627 @articlemazzeoant2004, title = An Ant Colony Algorithm for the Capacitated Vehicle Routing, volume = 18, issn = 1571-0653, url = http://www.sciencedirect.com/science/article/pii/S1571065304010868, doi = 10.1016/j.endm.2004.06.029, abstract = The Vehicle Routing Problem (VRP) requires the determination of an optimal set of routes for a set of vehicles to serve a set of customers. We deal here with the Capacitated Vehicle Routing Problem (CVRP) where there is a maximum weight or volume that each vehicle can load. We developed an Ant Colony algorithm (ACO) for the CVRP based on the metaheuristic technique introduced by Colorni, Dorigo and Maniezzo. We present preliminary results that show that ant algorithms are competitive with other metaheuristics for solving CVRP., urldate = 2018-06-01, journal = Electronic Notes in Discrete Mathematics, author = Mazzeo, Silvia and Loiseau, Irene, month = dec, year = 2004, keywords = Ant Colony, Capacitated Vehicle Routing Problem, Metaheuristics, pages = 181–186 @articlerussellhybrid1995, title = Hybrid Heuristics for the Vehicle Routing Problem with Time Windows, volume = 29, issn = 0041-1655, url = https://pubsonline-informs-org.gaelnomade-2.grenet.fr/doi/abs/10.1287/trsc.29.2.156, doi = 10.1287/trsc.29.2.156, abstract = This paper addresses the development of effective heuristics for solving the vehicle routing and scheduling problem with time window constraints. Both tour construction and local search tour improvement heuristics are developed. A major premise of the paper is that embedding global tour improvement procedures within the tour construction process can lead to improved solutions. Computational results are reported on test problems from the literature as well as real world applications. The hybrid construction/improvement heuristic is more effective in reducing vehicle fleet size requirements than previously reported heuristics., number = 2, urldate = 2018-06-01, journal = Transportation Science, author = Russell, Robert A., month = may, year = 1995, pages = 156–166 @articlehohybrid2008, title = A hybrid genetic algorithm for the multi-depot vehicle routing problem, volume = 21, issn = 0952-1976, url = http://www.sciencedirect.com/science/article/pii/S0952197607000887, doi = 10.1016/j.engappai.2007.06.001, abstract = The distribution of finished products from depots to customers is a practical and challenging problem in logistics management. Better routing and scheduling decisions can

result in higher level of customer satisfaction because more customers can be served in a shorter time. The distribution problem is generally formulated as the vehicle routing problem (VRP). Nevertheless, there is a rigid assumption that there is only one depot. In cases, for instance, where a logistics company has more than one depot, the VRP is not suitable. To resolve this limitation, this paper focuses on the VRP with multiple depots, or multi-depot VRP (MDVRP). The MDVRP is NP-hard, which means that an efficient algorithm for solving the problem to optimality is unavailable. To deal with the problem efficiently, two hybrid genetic algorithms (HGAs) are developed in this paper. The major difference between the HGAs is that the initial solutions are generated randomly in HGA1. The Clarke and Wright saving method and the nearest neighbor heuristic are incorporated into HGA2 for the initialization procedure. A computational study is carried out to compare the algorithms with different problem sizes. It is proved that the performance of HGA2 is superior to that of HGA1 in terms of the total delivery time., number = 4, urldate = 2018-06-01, journal = Engineering Applications of Artificial Intelligence, author = Ho, William and Ho, George T. S. and Ji, Ping and Lau, Henry C. W., month = jun, year = 2008, keywords = Distribution management, Hybrid genetic algorithm, Logistics, Multiple depots, Vehicle routing problem, pages = 548–557 @articlebergerparallel2004, title = A parallel hybrid genetic algorithm for the vehicle routing problem with time windows, volume = 31, issn = 0305-0548, url = http://www.sciencedirect.com/science/article/pii/S0305054803001631, doi = 10.1016/S0305-0548(03)00163-1, abstract = A parallel version of a new hybrid genetic algorithm for the vehicle routing problem with time windows is presented. The route-directed hybrid genetic approach is based upon the simultaneous evolution of two populations of solutions focusing on separate objectives subject to temporal constraint relaxation. While the first population evolves individuals to minimize total traveled distance the second aims at minimizing temporal constraint violation to generate a feasible solution. Genetic operators have been designed to capture key concepts from successful routing techniques to further enhance search diversification and intensification. A masterslave message-passing paradigm characterizes the parallel procedure. The master component controls the execution of the algorithm, coordinates genetic operations and handles parent selection while the slave elements concurrently execute reproduction and mutation operators. Providing additional speed-up, the parallel algorithm further expands on its sequential counterpart, matching or even improving solution quality. Computational results show the proposed technique to be very competitive with the best-known heuristic routing procedures providing some new best-known solutions., number = 12, urldate = 2018-06-01, journal = Computers & Operations Research, author = Berger, Jean and Barkaoui, Mohamed, month = oct, year = 2004, keywords = Genetic algorithms, Metaheuristics, Vehicle routing, pages = 2037–2053 @articlekarimicapacitated2018, title = The capacitated hub covering location-routing problem for simultaneous pickup and delivery systems, volume = 116, issn = 0360-8352, url = http://www.sciencedirect.com/science/article/pii/S0360835217305879, doi = 10.1016/j.cie.2017.12.020, abstract = In this study, a specific type of hub network topology, called hub location-routing, is presented in which the routes between the nodes assigned to a hub form a tour in this topology. The model minimizes the total cost of hub location and vehicle routing, subject to predefined travel time, hub capacity, vehicle capacity, and simultaneous pickups and deliveries. A polynomial-size mixed integer programming formulation is introduced for the single allocation type of the problems. In this paper, a set of valid inequalities is proposed for the formulation. In addition, a tabu-search based heuristic is suggested which determines the hub location and vehicle routes simultaneously. Series of computational tests are then executed to evaluate the performance of valid inequalities and tabu-search based heuristic. The results show that using all valid inequalities improves the solution time of the pure proposed model. Meanwhile, the proposed heuristic works efficiently in finding good-quality solutions for the proposed hub location-routing model., urldate = 2018-06-05, journal = Computers & Industrial Engineering, author = Karimi, Hossein, month = feb, year = 2018, keywords = Covering, Hub network, Tabu search, Valid inequality, Vehicle routing problem, pages = 47–58 @articlekaraoglanmemetic2015, title = A memetic algorithm for the capacitated location-routing problem with mixed backhauls, volume = 55, issn = 0305-0548, url = http://www.sciencedirect.com/science/article/pii/S0305054814001671, doi = 10.1016/j.cor.2014.06.009, abstract = The design of distribution networks is one of the most important problems in supply chain and logistics management. The main elements in designing a distribution network are location and routing decisions. As these elements are interdependent in many distribution networks, the overall system cost can decrease if location and routing decisions are simultaneously tackled. In this paper, we consider a Capacitated Location-Routing Problem with Mixed Backhauls (CLRPMB) which is a general case of the capacitated

location-routing problem. CLRPMB is defined as finding locations of the depots and designing vehicle routes in such a way that pickup and delivery demands of each customer must be performed with the same vehicle and the overall cost is minimized. Since CLRPMB is an NP-hard problem, we propose a memetic algorithm to solve the problem. To evaluate the performance of the proposed approach, we conduct an experimental study and compare its results with the lower bounds obtained by the branch-and-cut algorithm on a set of instances derived from the literature. Computational results indicate that the proposed approach is able to find optimal or very good quality solutions in a reasonable computation time., urldate = 2018-06-05, journal = Computers & Operations Research, author = Karaoglan, Ismail and Altiparmak, Fulya, month = mar, year = 2015, keywords = Capacitated location-routing problem, Memetic algorithm, Mixed backhauls, pages = 200–216 @articlebaldacciexact2004, title = An Exact Method for the Car Pooling Problem Based on Lagrangean Column Generation, volume = 52, issn = 0030-364X, url = https://pubsonline-informs-org.gaelnomade-2.grenet.fr/doi/abs/10.1287/opre.1030.0106, doi = 10.1287/opre.1030.0106, abstract = Car pooling is a transportation service organized by a large company which encourages its employees to pick up colleagues while driving to/from work to minimize the number of private cars travelling to/from the company site. The car pooling problem consists of defining the subsets of employees that will share each car and the paths the drivers should follow, so that sharing is maximized and the sum of the path costs is minimized. The special case of the car pooling problem where all cars are identical can be modeled as a Dial-a-Ride Problem. In this paper, we propose both an exact and a heuristic method for the car pooling problem, based on two integer programming formulations of the problem. The exact method is based on a bounding procedure that combines three lower bounds derived from different relaxations of the problem. A valid upper bound is obtained by the heuristic method, which transforms the solution of a Lagrangean lower bound into a feasible solution. The computational results show the effectiveness of the proposed methods., number = 3, urldate = 2018-06-05, journal = Operations Research, author = Baldacci, Roberto and Maniezzo, Vittorio and Mingozzi, Aristide, month = jun, year = 2004, pages = 422–439 @articlecordeaubranch-and-cut2006, title = A Branch-and-Cut Algorithm for the Dial-a-Ride Problem, volume = 54, issn = 0030-364X, url = https://pubsonline-informs-org.gaelnomade-2.grenet.fr/doi/abs/10.1287/opre.1060.0283, doi = 10.1287/opre.1060.0283, abstract = In the dial-a-ride problem, users formulate requests for transportation from a specific origin to a specific destination. Transportation is carried out by vehicles providing a shared service. The problem consists of designing a set of minimum-cost vehicle routes satisfying capacity, duration, time window, pairing, precedence, and ride-time constraints. This paper introduces a mixed-integer programming formulation of the problem and a branch-and-cut algorithm. The algorithm uses new valid inequalities for the dial-a-ride problem as well as known valid inequalities for the traveling salesman, the vehicle routing, and the pick-up and delivery problems. Computational experiments performed on randomly generated instances show that the proposed approach can be used to solve small to medium-size instances., number = 3, urldate = 2018-06-01, journal = Operations Research, author = Cordeau, Jean-Franois, month = jun, year = 2006, pages = 573–586 @miscdionneblablacar2018, title = BlaBlaCar monopolise le covoiturage : et la libre concurrence, alors ?, shorttitle = BlaBlaCar monopolise le covoiturage, abstract = Une petite voiture - Daniel Dionne/Flickr/CC BlaBlaCar controle 90% du marche du covoiturage en France, en Allemagne, en Italie et en Espagne. Fleuron francais , mais les monopoles ne sont-ils pas contraires aux regles de libre..., language = fr, url = https://www.nouvelobs.com/rue89/rue89-economie/20150416.RUE8698/blablacar-monopolise-le-covoiturage-et-la-libre-concurrence-alors.html, urldate = 2018-06-15, author = Daniel Dionne